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THE HAEMORRHAGIC STATES*

BY

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I feel considerable diffidence in opening a discussion on the haemorrhagic states. It is a subject on which there has already been too much writing and talking and too little experiment. Moreover, the time is not ripe for a schematic presentation such as we can employ in discussing the anaemias. Here we are not dealing with a single-cell system, but with the complex and interlocking mechanism of haemostasis, in which the plasma, the platelets, the endothelial lining of the vessels, and the connective tissues all participate. It is convenient to distinguish between haemophilia and related conditions, in which the blood does not clot normally, and purpura or haemogenia, in which the blood clots with normal speed but the bleeding time is prolonged. Even this distinction is not absolute, for there are conditions, such as melaena neonatorum, which combine the features of haemophilia and haemogenia; a defect in the plasma may not only affect the coagulation of the blood but also interfere with the agglutination of the platelets and the opsonization of the endothelium, so giving rise to phenomena more characteristic of purpura. And in some haemorrhagic states, especially those due to inherited fault, the usual clinical and laboratory tests for a haemorrhagic tendency may be negative in the face of a manifest tendency to bleed excessively. For the purpuras I propose to follow the classification recently given by Davidson (1937) into idiopathic or symptomatic as regards their aetiology, and thrombocytopenic or non-thrombocytopenic as regards their morphology. Let us agree that platelet and vessel wall are both concerned in purpura haemorrhagica and eschew controversy on their relative significance. I wish to treat the haemorrhagic states pragmatically and to isolate certain elements in a purely observational and empirical way, hoping thus to simplify the underlying complexity.

Hereditary Haemorrhagic States

I am increasingly impressed by the frequency and diversity of hereditary haemorrhagic diseases and by their resistance to treatment. The study of hereditary diseases in man has been vitiated by premature dogmatism and by the expectation of a constancy in the mode of inheritance which the student of genetics in plants and animals would from the first have thought improbable. Hereditary haemorrhagic states in man are not subject to immutable laws in pattern and pedigree, and it is wiser to think in terms of affected family groups than of specific diseases and laws of heredity. The hereditary haemorrhagic diseases provide some of the most pathetic cases we see, and it is natural that we should strive to do everything possible to relieve them. Nevertheless their suffering is not lightened by the publication of methods of treatment which time proves to have no curative value. The local application of coagulant snake venoms is the only new treatment whose value has been confirmed. The venom of Russell's viper (1 in 10,000 solution) or of the Australian tiger snake (1 in 5,000 solution) has been chiefly used (Macfarlane and Barnett, 1934; Rosenfeld and Lenke, 1935). Loose clot is washed away from the bleeding point, and tampons or other appropriate dressings soaked in the venom solution are then applied. With the use of snake venom in haemophilia it is now possible to repair wounds or to carry out small operations such as dental extraction which would previously have been fatal.

Other new treatments have already passed into the limbo of discarded things or show signs of passing there, as they have not lived up to the claims made for them. Any curative action of liver or oestrin in haemorrhagic states has by now been abundantly disproved. It will be interesting to hear the results of trials of the Sheffield treatment of haemophilia with an extract of egg albumen (Timperley *et al.*, 1936). Dr. R. G. Macfarlane and I have had no success whatsoever in four haemophiliacs treated by this method. Injections of moccasin snake venom have been recommended for all forms of chronic and recurrent bleeding, especially those of a purpuric type (Peck *et al.*, 1935, 1936). It is difficult to test a remedy which admittedly makes no difference to the platelets, the coagulation time, or the bleeding time. In three cases of hereditary thrombasthenia I have had no success with treatment with moccasin snake venom, and Davidson (1937) records a similar lack of success with this treatment in idiopathic thrombocytopenic purpura. Moccasin snake venom is reported to be more successful in hereditary telangiectasia, and in one case of this disease where I advised its employment there was a temporary remission of symptoms, but it was soon followed by relapse in spite of continuing treatment. Eugenists may derive a melancholy satisfaction from this catalogue of failures in the treatment of the hereditary haemorrhagic states, and there is no doubt that prevention will always be better than cure. All the same, work at present being carried out in Holland (Bendien and van Creveld, 1935, 1936, 1937) and America (Patek and Stetson, 1936; Patek and Taylor, 1937) suggests that a curative treatment for haemophilia may not for ever elude our grasp.

The Platelets and the Spleen

Idiopathic thrombocytopenic purpura stands out more clearly now that we have been able to detach from it the hereditary purpuras, the allergic thrombocytopenic

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purpuras due to sensitivity to foods and drugs, and the symptomatic thrombocytopenic purpuras due to destruction of the foci of platelet production in the marrow by organic and inorganic poisons. There are no gross changes in the spleen in idiopathic thrombocytopenic purpura, apart from simple hyperplasia, and the only abnormalities in the marrow are some increase in number and decrease in maturity of the megakaryocytes. We still do not know whether the disease is due to a diminished production or an increased destruction of the platelets. The dramatic results of splenectomy are somewhat discounted by the discovery that within an interval of months or years about half the patients relapse, though as a rule symptoms are much less troublesome than before the operation (Pemberton, 1934; Williamson, 1934). This discovery suggests that splenectomy is not a cure for idiopathic thrombocytopenic purpura in the same sense as it is a cure for acholuric jaundice. Remissions of thrombocytopenic purpura after splenectomy, like remissions of pernicious anaemia following this operation, are apparently due to "the lifting of a mysterious restraint which the spleen exercises upon the delivery of immature blood cells by the marrow" (Cornell, 1927), and do not signify any fundamental change in the underlying disease process. In making these reflections on splenectomy—for I do not call them criticisms—I am mindful of the fact that medical treatment is purely symptomatic and its results inferior to those of surgery (Brown and Elliott, 1936). It is true that there has recently been a revival of interest in treatment by *x* rays (Mettier and Stone, 1936; Rudisill, 1936), but I should like to hear comments on its value, for it is my impression that *x*-ray failures have not received the same publicity as *x*-ray successes.

The mortality of splenectomy in acute attacks of idiopathic thrombocytopenic purpura has been greatly reduced by the practice of repeated or massive transfusions, but in view of the frequency of spontaneous recovery, the difficulty of diagnosis from infectious and malignant purpuras, and the inability to promise complete security from relapse, I should like to ask how long we should persevere with medical treatment before asking the surgeon's help. My present opinion is that medical treatment should be tried for seven to ten days. In chronic cases the operative mortality is small, but I should advise restricting splenectomy to patients in whom the disease is really disabling or is subject to acute exacerbations. There are two other matters connected with splenectomy on which I should like to hear people's experiences. The first is the value of tests with adrenaline or protein shock before splenectomy. Does an increase of platelets in the blood after either of these agents indicate that the operation is likely to be successful, and is the reverse also true? The second question is, How often is relapse due to the growth of a spléniculus? I know that this phenomenon has been described, but when we compare the frequency of relapse in idiopathic thrombocytopenic purpura with its rarity in acholuric jaundice we must doubt whether growth of a spleniculus is a common explanation of relapse, and certainly I should hesitate to advise a second operation.

Vitamin C

The outstanding event of the last decade in the haemorrhagic diseases has been the isolation and synthesis of vitamin C or ascorbic acid. It can now so easily be administered in large doses by mouth or by injection that it has been tried in many diseases, and there has been a spate of papers, comparable with those which followed the introduction of insulin and liver extract, suggesting that ascorbic acid is a panacea for all kinds of haemorrhagic states and extending its range of usefulness even to dropsy and leukaemia. It is fortunate that at the same time methods have been devised for the estimation of vitamin C in the body fluids, and the test of the resistance of the capillaries has been put on a quantitative basis. It has been shown that while overt scurvy is rare in civilized countries subclinical scurvy is not uncommon, especially in patients who are febrile or who take special diets. Vitamin C cures scurvy rapidly and dramatically, but it has no action on haemophilia, thrombocytopenic purpura, Henoch-Schönlein purpura, leukaemia, or other non-scorbutic haemorrhagic states. It may be that patients with these diseases sometimes suffer in addition from subclinical scurvy, and that the removal of this disability may make all the difference to the appearance of symptoms. Unfortunately this has not been my experience, and I have given massive doses of vitamin C by the mouth and by the veins in these diseases without benefit.

Mrs. W., aged 29, had had symptoms of idiopathic thrombocytopenic purpura for at least two months. Her excretion of vitamin C in the urine was normal (26 mg. daily), and she excreted 729 mg. out of an intravenous test dose of 1,000 mg. of ascorbic acid, suggesting that her tissues were well filled with the vitamin. She was treated for a week with ascorbic acid, 300 mg. intravenously every day; but she had menorrhagia, and her haemoglobin level fell from 65 to 50 per cent. She was then submitted to splenectomy, and her symptoms were much improved. Her platelets remained low throughout, never rising above 40,000 per c.mm.

Miss C., aged 32, had a relapse of symptoms of idiopathic thrombocytopenic purpura twelve months after splenectomy. Less than the normal amount of vitamin C was present in the urine (12 to 24 mg. a day) and only a small fraction of a test dose of 600 mg. of ascorbic acid by mouth was excreted. She was treated for sixteen days with a high vitamin C diet plus 300 c.cm. of orange juice daily, but there was no change in the bleeding tendency or in the number of platelets, which fluctuated about 10,000 per c.mm.

Norman T., aged 15, who suffered from hereditary thrombocytopenic purpura, had a low urinary excretion of ascorbic acid (6.6 mg. a day) and required approximately 2,000 mg. of ascorbic acid to attain normal excretion. He was treated with daily intravenous injections, receiving 4,500 mg. in thirteen days without change in the haemorrhagic tendency or in the number of platelets, which remained about 30,000 per c.mm.

Miss A., aged 36, who suffered from non-thrombocytopenic purpura of many years' duration, associated with splenomegaly and chronic infection of the parotid glands, had a high output of ascorbic acid in the urine (47 mg. daily). As might have been expected, intravenous injections of ascorbic acid in amounts varying from 300 to 900 mg. daily had no effect on the purpura.

William B., aged 15, suffered from a hereditary haemorrhagic diathesis—probably thrombasthenia. His excretion of vitamin C in the urine was low (15 mg. daily). After taking 400 mg. of ascorbic acid a day by mouth for three days he still excreted only 143 mg. in twenty-four hours, so his tissues must have been deficient in vitamin C. He was then treated with a high vitamin C diet and orange juice, 300 c.cm. daily, but the experiment was discontinued after five days, as he had a slight fall and sustained excessive bruising of the face and eye.

I have treated three cases of chronic ulcerative colitis with massive doses of vitamin C, by mouth and parenterally, without affecting the number or composition of the evacuations or the condition of the patient; and three cases of acute leukaemia without affecting the haemorrhagic tendency, the oral lesions, the blood picture, or the fatal termination. I therefore feel justified in concluding that vitamin C, by mouth or parenterally, is of no value as a general or non-specific remedy for haemorrhagic states. In purpura haemorrhagica

the excretion of vitamin C may be normal or subnormal according to our present standards, but in either event vitamin C has no effect on the symptoms or the signs of the disease.

Wilbur (1937) comes to the same conclusion in a review of papers published on vitamin C, and it would appear as if those who have reported improvement have paid too little attention to the facts that many haemorrhagic states recover spontaneously and that diseases as serious as acute leukaemia may show temporary remissions. Vitamin C now takes its place with liver extract, iron, thyroid, and pentnucleotide as a remedy which has a well-defined and restricted sphere of action on the blood and its containing vessels. It is not my intention to minimize that sphere of action, as I believe that subclinical and atypical scurvy is a good deal commoner than most of us used to believe. Archer and Graham (1936) and others have shown that many patients with peptic ulcer suffer from subclinical scurvy, and that it is specially important to secure saturation with vitamin C in the face of haemorrhage or operation. Ingalls (1936) regards subclinical scurvy as an important factor in chronic subdural haematoma. Latent scurvy should be suspected whenever unexplained bleeding occurs in patients with alcoholism or with dietetic or digestive abnormalities, and the diagnosis should be clinched by chemical estimation of the vitamin in the body fluids, if possible, and by observation of the effect of treatment on the symptoms and the capillary fragility. In neither of the following two cases was the vitamin C content of the blood or urine estimated, but they nevertheless suggest that avitaminosis C due to defective diet may favour the occurrence of subcutaneous bleeding in hyperpiesia and nephritis. It will save time to state that in both men the blood count, platelets, bleeding time, and coagulation time were normal.

Peter F., aged 55, had been working with a metal drill pressed against his lower abdomen, as he had done many times without incident before. A day or so later his temperature rose, and it was discovered that he had a wide extravasation of blood over the pubes and perineum, passing on to the penis and scrotum. There was also a bruise on the right forearm. He had had dysentery twenty years before, and since that time had avoided fruit and green vegetables. He had had a cloud of albumin in the urine for many years, and the blood pressure was 210/120, though the blood urea was only 23 mg. per 100 c.cm. There were no other abnormal signs, and the temperature returned to normal in ten days. He was treated with a high vitamin C diet, including orange and tomato juice. Two months later there had been no recurrence of the bleeding and the tourniquet test was negative.

Albert C., aged 49, presented himself with a spontaneous large bruise on the right shoulder. He had had gout for eight years, and a year before had had an attack of unconsciousness suggestive of hypertensive encephalopathy. He drank six pints of ale a day, and his meals were hurried and irregular. The urine contained a trace of albumin, the blood urea was 76 mg. per 100 c.cm., and the urea clearance in the urine was only 26 per cent. of the normal. The blood pressure was 185/120 and the tourniquet test was positive. He was treated by restriction of alcohol, a high vitamin diet, atophan three days a week, and ascorbic acid 100 mg. a day by mouth on the other four days. Two months later he had had no more bleeding and the tourniquet test was negative, although the blood pressure had risen to 240/150.

Nutrition and Haemorrhage

Even more important than the isolation of ascorbic acid is the impact of biochemistry on the haemorrhagic states, the ability to reproduce them in animals, and the exchange of fertilizing ideas between ward and laboratory. The bearing of nutrition on the haemorrhagic states is not limited to scurvy and vitamin C. Szent-Györgyi (1936) and his colleagues were at first disappointed to find the action of pure ascorbic acid limited to scurvy, as they had successfully treated cases of non-thrombocytopenic purpura with impure preparations of vitamin C. They have now isolated from these sources a substance, flavon, which they have called vitamin P, as they believe it influences the permeability of the vessels. Nothing is more difficult than to establish criteria for capillary permeability and its variation in haemorrhagic states, nor is it easy to prepare large quantities of flavon. For these reasons little further progress has been made on these lines.

Fanconi (1928) in his work on intestinal infantilism noted not only scurvy but also a condition resembling haemophilia, due to a defect in the coagulating power of the plasma. Other paediatricians have observed the same phenomenon in undernourished children, and have been able to relieve it by a diet rich in protein (Kugelmass, 1932). Prothrombin is present in abnormally small amounts in the blood of the newborn infant, and it is probable that the haemorrhagic disease of the newly born, melaena neonatorum, is due to depression of prothrombin below a certain critical level (Brinkhous *et al.*, 1937). A disorder characterized by a lack of prothrombin in the plasma has been produced in birds by a defective diet (Dam *et al.*, 1937). Haemorrhagic chick disease is due to deprivation of a fat-soluble vitamin, the Koagulations-Vitamin or vitamin K, which is present in mammalian liver, egg yolk, and certain vegetable substances such as alfalfa. It is doubtful whether haemorrhagic chick disease can be exactly duplicated in mammals. A very similar disorder, the sweet clover disease of the rabbit, is likewise due to lowering of the prothrombin in the plasma, but though it is a dietetic disease it does not appear to be identical with haemorrhagic chick disease, and while it can be cured by extracts of alfalfa the curative fraction is said to have properties different from those of vitamin K (Quick, 1937). At present it is not clear what bearing these discoveries will have on human therapeutics. Liver and vitamin K have no action on hereditary haemophilia, but there remains a wide field for study in the treatment of melaena neonatorum and the haemorrhagic manifestations of malnutrition and disease of the liver.

In the paper from which I have previously quoted, Kugelmass (1932) advised a diet rich in fat and vitamin D to increase the platelets in purpura haemorrhagica. The literature of the use of vitamins A and D in the haemorrhagic states is confusing and contradictory. Vitamin A almost certainly has no haemostatic properties. Vitamin D, calcium, and parathormone form a mysterious trinity whose aid has been invoked in especial against the haemorrhagic symptoms of diseases of the liver, though they have been recommended in all forms of morbid haemorrhage (McNealy *et al.*, 1935; Lowenburg and Ginsburg, 1936). The evidence for any direct action on the platelets, the endothelium, or the coagulation mechanism *in vivo* is not convincing, and it is probable that any lessening of the morbid haemorrhage of jaundice results from the ability of calcium salts to neutralize the effects of cholaemia (Minot and Cutler, 1928). There is now some hope that this confusion may be clarified by the work of Schiff and Hirschberger (1937), who claim to have increased the platelets in normal and thrombocytopenic children by the administration of a fat-soluble factor that is different from vitamins A and D. This substance, which they have called vitamin T, is present in egg yolk and oil of sesame but not in cod-liver oil and olive oil. They suggest that effects have been attributed to vitamins A and D which were really due to the

solvents in which they were administered. These claims should be readily susceptible of proof or disproof.

It is now the duty of clinical research workers to test on human patients the permeability vitamin flavon, the coagulation vitamin K, and the thrombocyte vitamin T. It is much to be hoped that a higher standard will be attained in tests of this kind than was shown in the advocacy of oestrin, liver extract, and vitamin C for haemophilia and purpura haemorrhagica. Acute cases are rarely suitable, as they so rapidly recover spontaneously and it is hard to obtain numbers large enough for proper controls. Chronic cases of a well-defined type are much better, and they should preferably be idiopathic and not symptomatic in origin. There should be an adequate period of observation before treatment is begun. The isolation of insulin was largely due to the development of simple methods of estimating the blood sugar, and the application of liver therapy was much helped by the use of the reticulocyte crisis. In the same way objective criteria should be used in assessing the value of remedies for the haemorrhagic states—the number of platelets, the capillary resistance, the bleeding time and coagulation time, the retraction of the clot, and in special cases the plasma proteins, fibrinogen and prothrombin.

Summary

1. Hereditary haemorrhagic states show considerable diversity in symptoms and mode of inheritance.

2. The local application of coagulant venoms is the only considerable advance of recent years in the treatment of the haemorrhagic diseases. The value of liver, oestrin, moccasin venom, and the Sheffield extract of egg albumen has not been confirmed.

3. Splenectomy remains the most successful treatment for idiopathic thrombocytopenic purpura, but the frequency of relapses suggests that the operation is a temporary stimulus to platelet production rather than a specific cure for the disease.

4. Vitamin C is of value only in scurvy, whether overt or latent. It is not a general or non-specific remedy for haemorrhagic states. Nevertheless the isolation of ascorbic acid is of especial importance, as it marks the impact of biochemistry on the haemorrhagic states and a probable improvement in the technique of investigation.

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THE CLINICAL PATHOLOGY OF HAEMORRHAGIC STATES *

BY

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The development of the haemorrhagic state depends upon the escape of the red cells through the unbroken capillary wall; it may result from various causes. For the determination of the prognosis and the initiation of appropriate treatment accurate diagnosis is desirable. In none of the haemorrhagic states can this be made without the assistance of laboratory methods; in few of them, however, can it be established by laboratory methods alone. Usually it calls for the intelligent consideration of both laboratory and clinical data.

The first step in the laboratory investigation of any case of the haemorrhagic state will consist in the examination of the blood picture. This as usually understood comprises an estimation of the haemoglobin percentage, an enumeration of the red and white cells of the blood, a differential count of the white cells, and a report on the morphological characteristics of the formed elements of the blood—the red and white cells and the platelets. For the satisfactory investigation of the blood picture it is highly desirable that the specimens for each of the examinations mentioned should be taken in the appropriate manner straight from the patient. Preparations made from specimens of blood collected for transmission into oxalate or any other anti-coagulant are usually unsatisfactory and often are quite useless.

Bleeding Time

In the act of taking the specimen of the blood valuable information may be gained as to the bleeding time. No satisfactory quantitative method exists for this determination. Using a large-sized, bayonet-pointed surgical needle and making the puncture after slight massage in the lobe of the ear, the bleeding normally stops well within a minute; usually it is necessary to use a little force to express drops of blood after the first two or three minutes. If after the first two or three drops the blood continues to exude the bleeding time may be taken to be prolonged. In certain cases associated with gross platelet deficiency, such as thrombopenic purpura (purpura haemorrhagica), aplastic anaemia, and lymphatic leukaemia, the bleeding from a simple puncture may persist for many minutes—if unchecked, even for hours.

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Prolonged bleeding from such a small puncture never occurs in haemophilia, and may at once be held to exclude that diagnosis.

Blood Picture

In those cases in which lymphatic leukaemia is the cause of the development of the haemorrhagic state the preliminary examination of the blood picture will serve to establish the diagnosis. The discovery of the typical blood picture in a patient suffering from haemorrhagic purpura often comes as a surprise; it is too often forgotten that lymphatic leukaemia may exist in the complete absence of enlargement of the lymph nodes or spleen. A low white cell count does not in itself serve to rule out this diagnosis: the morbid state which is the basis of lymphatic leukaemia may exist without the escape of the abnormal white cells into the blood stream. Such cases will present the clinical picture of anaemia with haemorrhagic manifestations but with a marked diminution of the white cells. Such white cells as are present in the blood stream will be mainly of the lymphocytic order. Frequently there may be pyrexia and gangrene of the mucous membrane of mouth or gums; in such cases the differential diagnosis from agranulocytic angina may be almost impossible, short of examination of samples of bone marrow obtained by sternal puncture; and it is to my mind very doubtful whether this procedure should play any part in the clinical diagnosis of the haemorrhagic states.

Blood Platelets

In the absence of any abnormalities, either morphological or numerical, of the white cells attention must be directed to the appearance of the platelets in the stained film. If such films show few or no platelets, and especially if such examples as appear are larger than normal, the possibility of thrombopenic purpura (purpura haemorrhagica) presents itself. If films show abundant platelets this possibility may be set aside.

Assuming that the films show apparent diminution or absence of platelets, their enumeration is called for. For this purpose many techniques have been devised. My own practice is to prick the finger through a drop of 2.5 per cent. sodium citrate solution in normal saline. The mixed drop of blood and diluent is rolled into a wax-lined Widal tube half filled with the same solution. By means of a wax-lined pipette a drop of the diluted blood is transferred to a slide, covered with a slip, and ringed with vaseline. Using an oil-immersion objective, the platelets are counted against the red cells. From the number of red cells per c.mm. the number of platelets may readily be calculated. In my experience a platelet count of over 50,000 per c.mm. serves to exclude purpura haemorrhagica as a cause of bleeding.

A blood picture showing in the face of purpura and other manifestations of an established haemorrhagic state no morphological abnormalities of the white cells and the presence of platelets in relatively normal numbers will suggest the possibility of an anaphylactoid condition of the Schoenlein or Henoch type. A history of preceding urticaria or the presence of arthritic manifestations will be deciding factors. The platelets may be deficient, but on enumeration will never be found to be below 60,000 per c.mm. in purpura of anaphylactoid type.

Scurvy

A blood picture normal except for anaemia, with a clinical history on the basis of which both purpura haemorrhagica and idiopathic purpura can be eliminated, especially if occurring in a young child, should arouse suspicion of scurvy. Fully developed scurvy is now a rarity; but it still does occur, and not always among the more needy strata of the population. I have seen one case in the baby of a well-to-do family of which both the mother and father were university undergraduates. The child had been entrusted to the care of an old family retainer who had many years ago acquired and still steadfastly maintained faith in one of the earlier brands of proprietary infant foods. The condition is not unusual in adults as a result of prolonged adherence to a diet of milky slops for the treatment of gastric discomfort, often diagnosed as peptic ulcer but usually nervous dyspepsia.

The work of Harris and Ray (1935) and of Abbasy, Harris, Ray, and Marrack (1935) appears to offer a means of diagnosing subscorbutic states. According to these authors the body should naturally maintain a reservoir of vitamin C. If this reservoir is properly filled a large proportion of a massive test dose of the vitamin will be excreted in the urine; failure to excrete the major part of a suitable test dose within twenty-four hours indicates a state of vitamin C deficiency, otherwise latent scurvy. The test presents no particular difficulty. The ascorbic acid may be given either orally or parenterally in the form of "redoxon" (Hoffmann-La Roche). The titration of the excreted acid in the urine by means of the dichlorphenol-indophenol reagent is readily carried out. Using reagents kindly supplied by Messrs. Hoffmann-La Roche, Dr. Freida Young has in my department at the Royal Hospital investigated a number of patients suffering both from haemorrhagic and from other conditions. Reduced excretion was found in many cases, haemorrhagic and otherwise; in fact, few patients—no matter what their condition—satisfied Harris and Ray's standards for the normal. We were forced to the conclusion either that a large part of the hospital class population of this country is suffering from latent scurvy or that the standards for normal excretion are still to be established.

Coagulation Time

The estimation of the coagulation time of the blood is, next to the general examination of the blood picture, the most important procedure in the clinical pathology of the haemorrhagic state. In spite of its importance the technique remains very imperfectly standardized: a number of methods are available. In order to obtain comparable results it is essential that the observer should adopt one method and follow it closely. The capillary tube system of Dale and Laidlaw (1911–12) is handy, and has the advantage that the observations are made in a water bath at a temperature of 37° C. By this procedure, however, the clotting time is very short: Dale and Laidlaw regarded one minute forty-five seconds as being the mean of the normal, with only slight variation on either side. This method has the disadvantage that even in morbid states in which the clotting time is increased the actual extension shown by it is not great; thus in a case of haemophilia in which the test-tube clotting time was half an hour, by the capillary tube it was only four minutes. The older method of Lee and White (1913), though not so convenient, gives more readily comparable results. Blood is taken from a vein by means of a syringe previously rinsed in saline and is transferred in amounts of about 1 c.cm. into test-tubes of 8 mm. bore, also previously rinsed with saline. Timing them with a stop-watch, the test-tubes are alternately rotated about their short axes at half-minute intervals. "That point is taken as the end point at which

the blood no longer flows from its position but maintains its surface contour." It is important that the tubes be not stoppered; this decreases the coagulation time. The originators placed the normal limits as from five to eight minutes. I should be inclined to extend the upper limit of normal to ten minutes.

In addition the coagulation time varies inversely with temperature; Dale and Laidlaw showed that this acceleration of clotting is much more rapid at temperatures of over 25° C. than below. For practical purposes, in the temperate zone the test of Lee and White may be carried out at room temperature. Accurate estimation of the coagulation time is of great importance in the investigation of suspected haemophilia. The history, both personal and family, provides valuable information, but it is the prolongation of the clotting time that clinches the diagnosis.

Post-operative Haemorrhage

Estimation of the coagulation time is of particular importance when surgery is in prospect. In cases of haemophilia, when in the course of a natural remission or after blood transfusion the coagulation time by the method of Lee and White has been brought down to twelve minutes, the risk of serious and uncontrollable haemorrhage at operation is negligible.

In cases of jaundice, other than those of the "acholuric" type associated with haemolysis, the coagulation time may be prolonged, and its estimation will give valuable information as to the risk of post-operative haemorrhage. A delay in the coagulation time of anything over fifteen minutes by the method of Lee and White indicates the likelihood of inefficient natural haemostasis. The serum calcium in these cases of obstructive or overflow jaundice is not as a rule diminished, and may even be somewhat increased, but that this tendency to uncontrollable haemorrhage is associated with a shortage in the blood of calcium ions available for the clotting process may be demonstrated by the "calcium *in vitro* test" of Lee and Vincent (1914). This consists in adding three drops of 1 per cent. $CaCl_2$ solution to 1 c.cm. of freshly drawn blood. In blood in which delay of coagulation is due to the presence of bile salts this procedure brings about a marked diminution of the clotting time. In cases in which the delay is due to other causes it is without effect. In this type of case both blood transfusion and the parenteral injection of calcium salts, for which purpose many excellent preparations are now available, will quickly bring about the disappearance of haemorrhagic manifestations and reduce the clotting time to normal. Once this has been done there need be no fear of unusual post-operative bleeding.

It is important in all cases of jaundice to bear in mind that the tendency to bleeding and the delay of the coagulation time may not depend solely on deficiency of available calcium ions. In certain cases of gross hepatic disturbance, such as are met with in phosphorus or chloroform poisoning or in acute yellow atrophy or cirrhosis of the liver, interference with fibrin formation may occur. In such cases the coagulation time may be normal, but the clot when formed will be of poor quality; severe post-operative bleeding may then take place despite a normal clotting time, and little can be done to remedy matters.

Nephritis

In nephritis the haemorrhagic state may develop and may prove extremely troublesome. It is not an early manifestation, but may present itself in the middle or later stages of subacute glomerulonephritis. In such cases there may be epistaxis, bleeding from the gums, and a tendency to easy bruising, but purpura does not occur. Examination of the blood picture will show a simple anaemia only; pointers to the diagnosis will be found in a raised blood pressure and albuminuria. The blood urea may or may not show significant increase at this stage, but the van Slyke urea-clearance test will already show gross impairment of renal function. These haemorrhagic manifestations are of very grave significance, but the ultimate fatal issue may be postponed for months and even for years after their appearance. In the later stages of chronic nephritis of the arteriolosclerotic type manifestations of the same symptoms in a much more severe form and with actual purpura may arise; haemorrhage from the nose or bowel, stomach or uterus, may be profuse and intractable. Those fulminating manifestations are terminal: the blood urea at this stage will be found to be at a level of 300 mg. per 100 c.cm. or more, and death is not long postponed.

It is tempting to associate these haemorrhages with the lowering of the serum calcium, which is invariable in the developed uraemic state. In the earlier type of case, however, the serum calcium is not found to be diminished, and neither in those cases nor in the later terminal state in which the serum calcium is grossly below normal do parenteral injections of calcium have the same effect as in haemorrhage associated with jaundice.

The haemorrhagic state may present itself in the course of many acute infections and septic conditions. In these cases its establishment appears to be due to damage sustained by the capillary walls as a result of the infection. The differentiation of cases having an infective basis from those mentioned above seldom presents any great difficulty: their clinical pathology is that of the causative infection.

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In 1936 Sir John Orr published a study showing how the consumption of certain essential foods, including milk, varies with income, and the conclusion has become widespread that lack of purchasing power is the sole obstacle to increased consumption. A pamphlet entitled *Milk Consumption*, by K. A. H. Murray, and issued at 2s. 6d. by the Agricultural Economics Research Institute, Parks Road, Oxford, summarizes existing knowledge of the factors which affect the rate of milk consumption, such as price, income, size of household, and numbers of children. It goes on then to suggest, however, that little indication has been given of the relative importance of these factors, and that other influences of equal if not of greater importance have been neglected. The second section of the study describes a survey of milk consumption and utilization in Oxford which was designed to fill in some of the gaps in the existing knowledge, particularly the influence of factors such as habit and taste. The evidence presented indicates that while one of the difficulties in the way of increasing milk consumption is lack of purchasing power, possibly the biggest obstacles are antipathy, indifference, and prejudice. The general conclusion is that there is more hope of raising milk consumption by means of extensive advertisement and education than by raising incomes or lowering prices.

PRONTOSIL AND SIMILAR COMPOUNDS IN THE TREATMENT OF PUERPERAL HAEMOLYTIC STREPTOCOCCUS INFECTIONS*

BY

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Since 1936 prontosil and similar compounds have been used extensively in the treatment of puerperal infections due to the haemolytic streptococcus. Fuller (1937) has studied the chemical changes which prontosil undergoes in the body, and he has suggested that the active part of its molecule is sulphanilamide, so that the latter (simpler) compound probably acts in the same way as the more complex. At the isolation block of Queen Charlotte's Hospital prontosil was used in the first part of 1936, and streptocide (a preparation of sulphanilamide) has been employed since. As it is my purpose to study the clinical value of this group of drugs as a whole, I have drawn no distinction between the earlier cases treated with prontosil and the later cases treated with streptocide. I have referred to these drugs collectively as the "new aniline derivatives," and to their use as the "new chemotherapy." Prontosil has been given by intramuscular injection and by mouth in daily doses of 20 to 60 c.cm. (0.5 to 1.5 grammes) intramuscularly, and 6 to 12 tablets (2 to 4 grammes) by mouth. Streptocide has been administered by mouth in daily doses of 8 to 20 tablets (2 to 5 grammes). The maximum doses have been given to patients who appeared to be severely ill, and these doses have been continued until clinical improvement has occurred. After this the dose has been decreased, but smaller amounts have usually been used for as long as a week after the temperature has fallen to normal.

The New Chemotherapy

Some patients have developed marked cyanosis due to met- or sulph-haemoglobinaemia, but in no case has this complication given rise to anxiety, and it has always disappeared on withdrawal of the drug. In a few cases of severe infection the use of the drug has been continued in spite of the cyanosis without any untoward effect. There does not seem to be any constant relation between the dose administered and the tendency to develop cyanosis. Apart from cyanosis no serious ill effects have followed the giving of these drugs.

These aniline derivatives have been used at the isolation block of Queen Charlotte's Hospital since January, 1936, and I have to thank my colleagues on the clinical and laboratory staff for allowing me to report upon all the patients with haemolytic streptococcal infections of the birth canal who were admitted from January, 1936, until March, 1937. It is now a routine practice to employ one or other of these drugs in every case of haemolytic streptococcal infection, but in the early part of 1936 there were some twenty patients to whom they were not given because of the mildness of the infection. These cases are included together with those treated by drugs during 1936–7 because I wish to show broadly what changes there have been in the results at Queen Charlotte's isolation block since the introduction of the new drugs rather than to give details of cases treated. As I have said, it is not my intention to make any comparison between the earlier cases treated with prontosil and prontosil soluble and the later cases treated with sulphanilamide. The first group has already been reported upon by Colebrook, Kenny, and the staff of Queen Charlotte's Hospital (1936). The second group will be the subject of a report to the Therapeutic Trials Committee of the Medical Research Council, and this report will subsequently be published. I have also given the results of cases of haemolytic streptococcal infection admitted to the isolation block in the two years immediately preceding the introduction of the new drugs (1934–5).

There are thus two groups of patients to compare. The outstanding difference in the treatments in these two groups is that the new aniline derivatives were used almost as a routine in the one group and not at all in the other.

TABLE I.—*Results of Puerperal Infections due to the Haemolytic Streptococcus*

	1934–5 Group			1936–7 Group		
	Number of Cases	Deaths	Mortality per cent.	Number of Cases	Deaths	Mortality per cent.
(*a*) Total number of puerperal infections due to the haemolytic streptococcus	210	42	20	157	7	4.5
(*b*) Total number of infections clinically limited to the birth canal	98	0	Nil	104	0	Nil
(*c*) Total number of infections showing definite clinical evidence of localized spread beyond the limits of the birth canal (excluding septicaemia and generalized peritonitis)	50	0	Nil	30	1	3.3
(*d*) Total number of infections in which the haemolytic streptococcus was demonstrated on blood culture (excluding cases in which generalized peritonitis was also proved)	28	11	40	21	5	20
(*e*) Total number of infections in which generalized peritonitis was proved to be present (excluding cases with septicaemia)	18	15	83	1	0	Nil
(*f*) Total number of infections in which both septicaemia and generalized peritonitis were proved to be present	16	16	100	1	1	100

Table I (*a*) shows that the gross mortality in the 1934–5 group was 20 per cent., compared with a mortality of 4.5 per cent. in the 1936–7 group. The reduction in the mortality rate during the period when the new drugs were used is very striking. In their original reports Colebrook and Kenny considered the significance of these improved results, and were cautious in attributing them entirely to the treatment with the new drug. They drew attention to the fact that there had been a progressive fall in the mortality rate from haemolytic streptococcal infections admitted to the North-Western Fever Hospital, London, in spite of the fact that the new treatment was not used in that hospital, and they quoted Mr. James Wyatt's figures in this connexion. They pointed out, however, that the fall in mortality rate at the North-Western Fever Hospital had been progressive over a number of years, whereas there had been no such progressive fall at Queen Charlotte's. The fall from about 20 per cent. to 4.7 per cent. which they quoted from Queen Charlotte's was abrupt, and coincided with the introduction of prontosil into the scheme of treatment.

* Read in opening a discussion in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Belfast, 1937.

Streptococcal Infection of Birth Canal and Adjacent Tissues

Table I (*b*) shows that so long as the haemolytic streptococcus is confined to the birth canal there is practically no mortality in either group; and Table I (*c*) illustrates that even when the infection has spread to surrounding pelvic and lower abdominal tissues the patient almost invariably recovers, provided that widespread dissemination by the blood stream or by spread all over the peritoneal cavity does not occur. (The one death in the 1936-7 group which occurred in the absence of general peritonitis or septicaemia was due to a pulmonary embolus.) For proof that the infection has spread beyond the limits of the birth canal (apart from proved septicaemia or generalized peritonitis) reliance has been placed on the finding of a definite inflammatory mass in the pelvis or abdomen, and only cases in which such a mass has been demonstrated either clinically or at post-mortem examination have been classified under this heading.

These figures—Table I (*c*)—show that the haemolytic streptococcus is "virulent" only in so far as it is invasive, and that a very large amount of tissue can be infected without causing death from absorption of toxins. In comparing the two groups of patients it will be noted that in the 1934–5 group the infection was clinically limited to the birth canal in only 47 per cent. of the cases. In the 1936–7 group the infection was clinically limited to the birth canal in 66 per cent. This may be interpreted in one of two ways. Either the prevalent haemolytic streptococcus of 1936–7 was less invasive—that is, less "virulent"—than that of 1934–5 or else the chemotherapy of 1936–7 helped to prevent the invasion of tissues around the birth canal.

In many cases of localized spread of infection beyond the limits of the birth canal it is difficult to say precisely when a definite inflammatory mass was demonstrated. Clinically a "sense of resistance" may give place to a "thickening," and it may not be until several days later that an obvious "lump" is found. In spite of this difficulty an attempt has been made to give a figure indicating the proportion of cases in which an inflammatory mass developed after admission to hospital—that is, after the institution of treatment. In the 1934–5 series forty-one of the patients (20 per cent.) had a demonstrable inflammatory mass on admission to hospital, and an additional twenty-nine patients (14 per cent.) developed a mass some time after admission. In the 1936–7 series an inflammatory mass was found in twenty-seven patients (17 per cent.) on admission to hospital, and in nine* patients (6 per cent.) a similar mass developed after admission. There was therefore a notable reduction in the proportion of cases in which an obvious spread of infection occurred after admission to hospital in the period when the new drugs were employed. This may be evidence of the efficacy of the new chemotherapy, or, alternatively, it may be explained on the grounds that the virulence of the haemolytic streptococcus was diminished in the 1936–7 period.

Mortality Rates in Septicaemia

Table I (*d*) shows the mortality rates in proven septicaemia (excluding cases in which general peritonitis was also proved). It was 40 per cent. in the group of patients who did not receive the new drugs. Even 40 per cent. may seem to be a surprisingly low mortality for blood-positive septicaemias due to the haemolytic streptococcus,† but in explanation of this I think that the care with which the bacteriological technique is carried out must be a factor in giving an (apparently) low mortality rate for cases in this class. If a less careful technique had been employed it is probable that some of the less severe septicaemias would not have been detected, so that although the total number would have been less the mortality rate would have been higher. This factor is of no importance in comparing the results in the two groups under review, because the technique of blood culture was identical in both. In the 1936–7 group the mortality for cases of proven septicaemia (excluding cases in which general peritonitis was also present) was 20 per cent.; but before trying to assess the significance of this improvement it is useful to try to measure the severity of the cases in the two groups. Dr. Colebrook and his co-workers have, as a routine, estimated the number of organisms per cubic centimetre in the blood in cases of septicaemia, and as a general rule the clinically milder cases are associated with a lower count than the more severe. The records of these counts are not strictly comparable between various patients, because the number of organisms in the blood may vary greatly in different stages of the disease, and because blood cultures may be repeated more often in some patients than in others. Very roughly speaking, however, if the records show that a count of less than 10 organisms per c.cm. has not been exceeded at any time during the stage of pyrexia the septicaemia is probably "mild." The records of the cases at Queen Charlotte's Hospital show that the lower mortality from septicaemia in the 1936–7 period was associated with a relative increase in the proportion of "mild" cases, in comparison with the 1934–5 period. This diminished invasion of the blood stream in the 1936–7 period is what we might expect to find if the new drugs were effective in checking the invasiveness of the haemolytic streptococcus, but, alternatively, a falling off in the virulence of the prevalent haemolytic streptococcus of 1936–7 would also manifest itself in the same way.

In the 1934–5 group a positive blood culture was obtained within twenty-four hours of admission in thirty-one cases (15 per cent.) of all cases infected with the haemolytic streptococcus. In the 1936–7 group the corresponding figure was twenty-two (14 per cent.). In the 1934–5 group ten cases (5 per cent.) developed a septicaemia some time after admission. In the 1936–7 group only one patient developed a septicaemia (and in this case the first blood culture was not taken until several days after admission). The incidence of septicaemia before admission does not greatly differ in the two groups, and this is some evidence that there was not any considerable difference in the invasiveness (virulence) of the prevalent streptococcus in the two periods. If this is so the diminished incidence of septicaemia developing after treatment with the new drugs is some evidence that the good results are due to the drugs rather than to a hypothetical decrease in the virulence of the infecting organism.

Generalized and Generalizing Peritonitis

Table I (*e*) and (*f*) gives the results when "generalized" and "generalizing" peritonitis occurred, but there are good reasons for exercising very great caution in interpreting these figures. The outcome of any peritoneal infection depends upon whether the tendency of the tissues to localize the infection overcomes the tendency

* Among these nine patients in the 1936–7 group there were four who did not receive any treatment by the new drugs, so that, by excluding the four cases, there were only five (3.2 per cent.) who developed a demonstrable mass after treatment with the new drugs.

† If the results for four years (1932–5) are analysed the mortality at Queen Charlotte's was 47 per cent.

of the organisms to generalize the infection, and the issue is often in the balance for some days. Unless laparotomy is performed, post-mortem examination is the only way in which a certain diagnosis of "generalized" or "generalizing" (as opposed to "localized" or "localizing") peritonitis can be made. The frequency and the readiness with which laparotomy has been employed at Queen Charlotte's Hospital has varied from time to time, so that the opportunities for proving a diagnosis of "generalizing" or "generalized" peritonitis have also varied. It is not necessarily of significance, therefore, that there were thirty-four such cases in 1934–5, against two cases in 1936–7. Changes in proved post-mortem findings are, however, significant. In the 1934–5 group (210 patients) generalized peritonitis was found post mortem in twenty-nine cases. In the 1936–7 group (157 patients) it was found post mortem in only one case. The relative rarity of this proved necropsy finding in the latter group must mean either that the invasiveness (virulence) of the prevalent streptococcus was very much less in the 1936–7 group or else that the new chemotherapy was very effective in preventing the widespread dissemination of the infection.

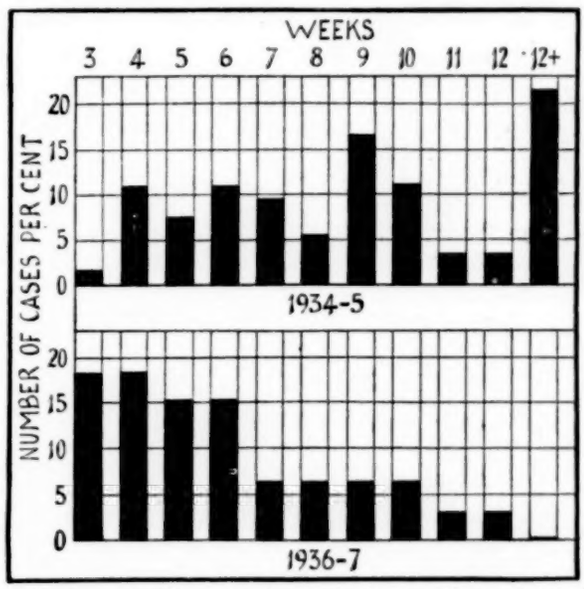
Results from the New Chemotherapy

It is clear from the above analysis that since the introduction of the new chemotherapy there has been a very great improvement in the results obtained at the isolation block of Queen Charlotte's Hospital. The improved results are demonstrated: (1) by a considerable fall in the total mortality rate; (2) by a reduction in the proportion of cases in which the infection spread beyond the limits of the birth canal, and by the relative infrequency with which an inflammatory mass developed after treatment had been instituted; (3) by a significant fall in the mortality rate in cases of proved septicaemia associated with a relative decrease in the proportion of severe cases of septicaemia, and by a fall in the incidence of septicaemia developing after the treatment had been instituted; and (4) by the relative infrequency with which generalized peritonitis has been found post mortem. There is no doubt about these facts. There is some doubt about their meaning.

Although they can be explained by assuming that the new aniline derivatives have supplied a highly effective remedy for haemolytic streptococcal infections, most of them can also be explained by assuming that the virulence of the haemolytic streptococcus has diminished spontaneously in the period during which the new drugs have been employed. There are few features revealed by the results so far discussed that cannot be accounted for on either hypothesis. These good results are mainly an expression of diminished invasion of tissues (including the blood stream) by the organisms. This may be the result of increased resistance on the part of the tissues—that is, it may be due to the chemotherapy—or it may be due to diminished virulence of the organism itself. It is a matter of personal fancy which of these alternative explanations will appeal to any of us as individuals, but the accumulated experience of the past shows that a fortuitous change in the virulence of a prevalent organism is no more improbable than the discovery of an effective chemotherapeutic substance.

Is there any method, apart from the test of time—and in this case the time must necessarily be many years—by which we can get evidence in this urgent question? Can it be shown that in non-fatal cases where invasion of tissues has actually occurred the new chemotherapy is effective in hastening the resolution of the disease? The accompanying diagrams show the time taken for patients to recover sufficiently to be discharged from hospital in cases having a localized spread of infection outside the birth canal (as proved by the demonstration of an inflammatory mass in the pelvis or abdomen). Some such patients died from an associated septicaemia or general peritonitis. All deaths have been excluded, and the cases have been grouped according to the number of weeks that elapsed between the confinement and the time the patient returned home. The number of patients in each group has been expressed as a percentage of the whole.

When the cases are arranged in this way it appears that there was a considerable shortening in the time of the average illness in the 1936–7 period as compared with the 1934–5 period. If we take these diagrams at their face value the improvement during the period of chemotherapy cannot be accepted as evidence of diminution in the virulence of the prevalent haemolytic streptococcus



Diagrams showing the duration of the illness (interval between confinement and discharge from hospital) in non-fatal cases in which an inflammatory mass was demonstrated beyond the limits of the birth canal. The percentage distribution of patients is indicated by the height of the columns. The results for 1934–5 are compared with those for 1936–7.

during this period, because we are dealing only with cases with demonstrable invasion of tissues outside the birth canal, and invasion of tissues is in fact the clinical manifestation of virulence. To suggest that, although the streptococcus of 1936–7 invaded the tissues in these selected cases, it was less virulent than the streptococcus of 1934–5, which did precisely the same thing, is to ignore what we know of the morbid anatomy of haemolytic streptococcal infections. We know, for example, that the virulence of the diphtheria bacillus depends upon its ability to produce a very potent toxin, and not at all upon its power of invading tissues. Clinical and pathological experience has taught us that the haemolytic streptococcus behaves in an entirely different way. It kills the patient only in so far as it invades her tissues widely, and the conception of a relatively avirulent haemolytic streptococcus that invades tissues widely is a contradiction in terms that finds no support in practical experience.

Taken at their face value, therefore, the diagrams indicate that the shortened convalescence in the patients treated with the new aniline derivatives is to be attributed to the treatment rather than to another variable factor. This is the most significant piece of direct evidence that I have

been able to find that disallows the alternative explanation that the improvement in results was due not to the treatment but to a fortuitous change in the virulence of the prevalent streptococcus. There are, however, two reasons for questioning the value of these diagrams. In the first place they refer to only small numbers of patients (fifty-six in 1934–5 and thirty-two in 1936–7), so that statistically they are open to criticism. In the second place, although I consider that invasion of tissues is the best possible clinical measure of virulence in haemolytic streptococcal infections, it is not possible to assert that the tissues were equally widely invaded in the two groups concerned. Great care has been taken to include only those patients in whom a definite inflammatory mass was demonstrated, but it is just possible that the average size of the mass was considerably greater in the 1934–5 series than in the 1936–7 series. If this were so it might be evidence of a minor variation in virulence of the streptococcus in the two series. No further analysis on these lines has been attempted, because it would incur the possibility of statistical and observational errors so great as to negative any results.

Conclusions

The new aniline derivatives have been employed at Queen Charlotte's Hospital since 1936; in the doses in which they have been given their use appears to be free from serious danger and has been followed by a very great reduction in the mortality rate for haemolytic streptococcal infections. Analysis of the causes of this improvement in mortality rate shows that it is associated mainly with a decrease in the widespread invasion of tissues by the haemolytic streptococcus rather than with a greater tendency to resolution of the disease once widespread invasion of tissues has occurred. This feature makes it necessary to consider whether the improvement since January, 1936, is due to the efficacy of the treatment or whether it is due to a change in the virulence of the prevalent organism. It is possible that both factors may be concerned. In non-fatal cases in which tissues beyond the limits of the birth canal have been invaded by the haemolytic streptococcus there is some clinical evidence that the new drugs do actually hasten the resolution of the inflammatory process, and this is a good reason for believing that the treatment, rather than a change in the virulence of the organism, is responsible for the improvement in this direction.

While I am unwilling to guess how far the new drugs have been responsible for the undoubted improvement which has followed their clinical use, there is every reason to continue to employ them until their value or otherwise is firmly established.

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The first number of the seventh volume, dated March, 1935, of the *Index to the Literature of Food Investigation*, which has only just been issued, covers the literature published in 1934. It is hoped, states a prefatory note, to complete during the next twelve months abstracts of the literature published during 1935 and 1936, which will form vol. vii, No. 2, and vol. viii. Meanwhile the first part of vol. ix, covering papers published this year, is in preparation. Copies of the *Index* may be obtained from H.M. Stationery Office, London, price 5s.

OTITIS EXTERNA*

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By this term otologists refer to certain types of inflammatory lesion of the external auditory canal. These are all infections of the skin lining the canal. Since, however, this skin is directly continuous with that covering the auricle and surrounding parts, obviously the infections need not always originate in or be confined solely to the anatomical boundaries of the canal. Therefore, in discussing their aetiology and treatment we should not limit ourselves too strictly to this part of the external ear.

Aetiology

As a cause of the lesion the most important factor is naturally the invading organism or virus. Those of external origin give rise to the commoner types of eruption and include the pityrosporon, acne bacillus, *Staphylococcus albus*, *Staphylococcus aureus*, and *Streptococcus longus*. The rarer forms may be due to various fungi, especially those of the aspergillus variety, to the *Bacillus pyocyaneus*, the bacillus of diphtheria, Plaut-Vincent's organism, and very occasionally the tubercle bacillus. On the other hand, the infective organism or virus may reach the skin of the ear by way of the blood stream, producing eruptions that can be recognized as exanthematous, syphilitic, or influenzal.

Their location, and in the case of organisms their site of growth in the various structures of the skin, bring about defence reactions which in turn determine different characteristics in the form of the lesions. The defence reactions include the usual phenomena of inflammation—for example, hyperaemia, oedema, exudation of leucocytes, etc.—but to these must be added another very important one—namely, the so-called eczematous reaction, which it is agreed always indicates cell sensitization. As to the relation of this reaction to that of true eczema opinion is still divided, but we may assume that for clinical purposes the results of both are much the same. With regard to the site of growth we find that certain organisms appear to have a special predilection for definite structures of the skin. For example, the pityrosporon and the aspergillus confine themselves chiefly to the stratum corneum, the *Streptococcus longus* to the deeper layers of the epidermis, even extending to the dermis, whilst the acne bacillus, *Staphylococcus albus* and *Staphylococcus aureus* favour the pilo-sebaceous follicle. In turn the defence reactions of the epidermis to the first group of above-mentioned micro-organisms may result in such clinical manifestations as a simple scaliness or dandruff, a more intensive desquamation, or as a definite cuticular inflammation, primarily perifollicular, so that the affected part takes on the appearance of a seborrhoeic dermatitis. When the deeper layers of the epidermis are invaded by the *Streptococcus longus* the resulting lesion may then be the subcorneal vesicle of impetigo, the streptococcal fissure, or the ecthymatous ulcer. Finally one must mention the defence reactions of the pilo-sebaceous follicle to invasion by the acne bacillus, and *Staphylococcus albus* and *aureus*, a group of organisms referred to by some dermatologists as the seborrhoeic triad. Of this group the *Staphylococcus aureus*

* Read in the Section of Oto-rhino-laryngology at the Annual Meeting of the British Medical Association, Belfast, 1937.

is by far the most potent, and it tends to invade the deeper parts of the follicle, giving rise to that distressing lesion known as the boil or furuncle. Furthermore, should the cutaneous cells become at any time sensitized to one of these infective agents the lesion will assume the well-known characteristics of an eczematous eruption.

Some other points in the aetiology of these affections must be indicated. Besides the obvious factors of debility and bad hygienic surroundings there are others that make certain persons specially liable to infections of this kind. In the view of most dermatologists the seborrhoeic subject is particularly susceptible, and herein doubtless heredity and habits play their respective parts. Whereas the skin of a person in perfect health is remarkably free from germs, in the case of the seborrhoeic person the wide-open lumina of sebaceous follicles generally teem with the acne bacillus, the pityrosporon, and the *Staphylococcus albus*. Although these are usually benign in character they undoubtedly prepare the soil for invasion by more active organisms. The scalp is a region particularly affected in this manner; hence infection can readily spread by contact from it to the external ear. Again, in my experience the fair-skinned person is more liable to skin eruptions than the dark and to exhibit any allergic manifestations.

Another factor is the initial lesion in the skin surface that allows the entry of organisms. This can be brought about in many ways—for example, from irritation caused by dirt about the crevices and folds of the auricle, wax in the meatus, or a chronic suppurating discharge from the middle ear. Direct injury also plays its part, and we have all seen the result in a perichondritis of the pinna or a spreading erysipelas after plastic operations on the cartilaginous meatus. Perhaps, however, the commonest cause of the initial lesion is the imprudent use by the patient himself of a finger-nail, a match-stick, or some such implement to remove wax from his ear or to allay an irritation set up by the latter or consequent upon the local congestion produced by a chronic tubal and middle-ear catarrh, themselves the result of some irregularity in the nose or nasopharynx. The medical attendant, too, may be to blame, as when he uses too irritating a fluid or makes unskilful attempts to extract a foreign body from the meatus and without due care for asepsis. Finally, let us mention in passing, since we cannot discuss them here, such obscure aetiological factors as age incidence, heredity, environment, immunity, cell sensitization, the allergic condition, and the virulence of the invading organism and its saprophytic or parasitic qualities.

Varieties of Otitis Externa

We can now enumerate the commoner clinical varieties of otitis externa and mention a few of the more important details which help us to recognize them.

OTITIS EXTERNA CIRCUMSCRIPTA, OR FURUNCLE

A furuncle begins in a pilo-sebaceous follicle; hence this lesion is confined to the outer or fibro-cartilaginous portion of the meatus. The causal micro-organism is usually the *Staphylococcus aureus* or *albus*, although occasionally a pneumococcus may be found. It is an acute condition beginning as a tender spot, quickly followed by pain and tenderness which may become of an excruciating character. There may be one furuncle or more than one, and there is a great tendency to recurrence. If we can see the actual localized swelling or swellings in the meatus and at the same time a tympanic membrane that shows little or no acute signs of inflammation the diagnosis is easy and certain. This, however, is not so in severe cases or in those associated with an eczematous condition, when the swelling may be so great as to close the canal and prevent a view of the tympanic membrane. Then the case may be mistaken for one of acute mastoiditis with perimeatal oedema or, especially if the inflammation has spread to surrounding structures behind the ear, oedema or even an abscess over the mastoid region. In such cases an anaesthetic may be necessary to allow of adequate inspection of the drumhead, or of an incision being made over a post-auricular swelling in order to determine whether the pus is superficial or deep to the periosteum. Furthermore, we must not forget that a furunculosis may coexist with an acute mastoiditis or be confused with a parotid abscess that has discharged into the meatus.

OTITIS EXTERNA DIFFUSA

This also is an acute condition, and comprises a number of different infections. The signs and symptoms resemble those of furunculosis but are generally more severe, and the canal in its entire length is more or less inflamed. The invading organism is usually a streptococcus (sometimes the erysipelas variety), or it may be the *Bacillus pyocyaneus*, the Plaut-Vincent organism, or very rarely that of diphtheria. In many of these infections the acute diffuse meatitis affects the surface of the tympanic membrane as well as the walls of the canal, and may be recognized in its various stages—namely, first a stage of desquamation with superficial swelling and serous discharge; secondly, a stage of deep swelling involving the perichondrium; and, thirdly, a stage of suppuration. Many textbooks still mention a croupous form of otitis externa in which a coagulated fibrinous membrane is repeatedly thrown off in the form of casts of the inner part of the canal and drumhead. Its aetiology was never definitely known, and it is doubtful if it is now ever seen. A true diphtheritic membrane, however, remains a possibility, and although exceedingly rare it should be borne in mind whenever a diffuse otitis externa appears without obvious cause in a child who has a diphtheritic affection in the nose or throat.

OTITIS EXTERNA MYCOTICA (OTOMYCOSIS)

Various fungi may gain entrance to the external auditory canal and there set up inflammatory reactions. Among them may be mentioned the pityrosporon and the aspergillus. The former is said to be perhaps the commonest cause of an infective meatitis. This may appear clinically as no more than a non-inflammatory scaliness comparable to ordinary dandruff of the scalp. It may, however, be followed by a definitely inflammatory seborrhoeic dermatitis. Its importance lies in the fact that it seems to prepare the way for further invasion by other organisms—for instance, by the *Staphylococcus albus* and *aureus*, which may lead to meatal boils, or by the streptococcus, which is likely to produce impetiginization with fissures at the angles of the meatal orifice (Barber). Eczematization also readily occurs.

In the case of the aspergillus the fungus may simply inhabit the meatus without causing any morbid changes in the tissues upon which it grows, thus giving rise to no symptoms except perhaps a slight impairment of hearing. If, however, the tissues become invaded, the mycelia perforating the lining membrane of the bony canal and the skin covering the drum membrane, an acute inflammatory process arises. The germ appears to require warmth and

moisture for its growth, and oils and fatty matter form a suitable nidus for its development. No doubt this explains why the condition is most frequently met with in tropical and subtropical climates such as that of the Hawaiian Islands.

ECZEMATOUS OTITIS EXTERNA

This affection should not be confused with that of true eczema. Dermatologists to-day generally agree that the majority of cases of so-called eczema of the external auditory meatus are really examples of infective meatitis. It has been shown that the eczematous reaction occurs when the tissue cells of the skin become sensitized to any of the infecting micro-organisms or their antigens. Hence it may superimpose itself upon any of the simple infections such as are produced by the pityrosporon, *Staphylococcus aureus*, *Streptococcus longus*, or even the tubercle bacillus. Two types can generally be recognized—an acute and a chronic. In the former an initial stage of redness, itching, swelling, and smarting pain is followed by a stage of exudation and crusting. The area involved may finally become denuded of its epithelium and present a raw and bleeding surface. In the chronic form the appearance of the meatus may vary from a dry scaliness due to exfoliated epithelium to a sclerosis of the skin, leading to great thickening and stenosis of the meatus. Here again itchiness is the most prominent symptom, and it leads the patient to cause further irritation by scratching.

OTITIS EXTERNA HAEMORRHAGICA

This condition is often seen in patients after an attack of influenza. Earache is severe and the onset sudden, as in an acute middle-ear infection. Otoscopy reveals one or more purple blebs (or blood-filled blisters) situated upon the tympanic membrane or close to it on the meatal walls. This as a rule requires little if any local treatment beyond avoidance of a mixed infection.

In concluding this part of the subject it may be permissible to mention certain lesions of the auricle and surrounding parts which, although they may occur independently, are very often associated with a diffuse inflammation of the external auditory canal. Those which most concern us are perichondritis, erysipelas, impetigo, intertrigo, fissures, and the various eczematous conditions. Of these intertrigo and fissures deserve special mention. They affect the natural folds and angles of the auricle and are examples usually of a chronic streptococcal invasion often preceded by an infection with the pityrosporon. Intertrigo is most frequently seen in the retro-auricular fold, whilst fissures are likewise found here and also beneath the lobule and in the angles of the meatal orifice.

Treatment

In the treatment of skin infections the three principal measures are: (1) cleansing of the affected part as thoroughly as possible; (2) the application of some form of non-irritating germicide; and (3) protection from further irritation and infection. In treating a relatively inaccessible region such as the meatus we are necessarily limited in our choice of methods and medicaments. In cleansing the meatus I still prefer, in spite of many opinions to the contrary, the old-fashioned method of syringing. The simplest and most suitable lotion I have found for this purpose is a warm boric acid solution. The softening and hence adverse effect of water upon skin infections, especially those of an eczematous nature, can be easily overcome by the subsequent instillation of a few drops of 60 to 70 per cent. alcohol, used as a dehydrating agent. The latter also acts as a germicide and readily penetrates right down to the fundus of the canal, where ointments obviously cannot be conveniently applied. Ointments, however, can be used for the outer portion of the meatus, and here the cotton wound-applicator is of most service. Protection can be afforded to the meatus very simply either by a pledget of cotton-wool in the region of the concha or by narrow ribbon gauze inserted into the meatus itself. The latter, if kept moist with drops, may also serve as a means of applying a continuous antiseptic to the walls of the canal.

The choice of a suitable non-irritating germicide presents the most difficult problem in the treatment of all types of otitis externa. There is also the personal factor to be considered, a certain germicide being found efficacious in one type of patient but not in another. Hence in any individual case we may have to find out by actual practical experience what sort of germicide will produce the best results. Of the many ointments suggested preference should be given to those containing a zinc basis. Cream of zinc and Lassar's paste I personally have found most useful. These act probably more by reason of their protective nature rather than their germicidal qualities. Sulphur and mercury ointments more often than not appear to be too irritating. When a stimulating ointment is required it will be found convenient to add liquor carbonis detergens (or its successor, liquor picis carbonis) to the zinc preparation. When desquamation is present, salicylic acid, 10 grains to the ounce, is essential.

Local treatment will also include that of a coexistent lesion of the auricle and surrounding parts, especially an infected scalp, or incision of a furuncle or a diffuse suppurative meatitis, or possibly a retro-auricular abscess.

As regards general treatment many different methods have been tried, but as yet their true value has not been determined. They include vaccine and serum therapy (intradermal or subcutaneous); injections of collosal manganese, stannoxyl, etc.; various diets (especially in the eczematous affections); treatment of the seborrhoeic patient; light therapy; and *x* rays. Upon their value I can offer no useful opinion beyond the statement that each in turn has proved successful in certain cases, but none is really specific in all.

The new maternity unit of the Southampton General Hospital makes provision for fully one-third of the number of births in the borough, taking as a basis the 1933 figure of 2,854. The accommodation comprises forty-two lying-in beds, four pre-labour beds, and three isolation beds, and it is expected that between 900 and 1,000 cases will be admitted each year. Preference will be given to patients suffering from abnormalities of pregnancy or labour, to those requiring ante-natal observation, and to those whose domestic conditions are unsatisfactory. The unit has been constructed entirely on one floor, permitting the addition of one or even two stories in the future without interference with the existing walls. Among modern improvements is a signalling system, whereby red and green lights over the door of the ward and in the duty room inform the nursing staff of the requirements of individual patients, and electrical equipment attached to the poison cupboard which operates a red light and a buzzer that come into action immediately the cupboard door is opened and continue until it is closed. There is also an incubator with thermostatic control.

"BUTTONHOLED" EXTENSOR EXPANSION

BY

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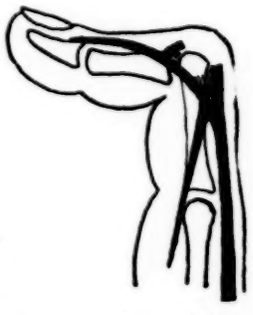
Injuries to the tendons which govern the delicate movements of the fingers are all potentially serious as regards subsequent function, and each particular injury demands its own appropriate treatment. Certain of these injuries are rare, and therefore when they occur may not be recognized. Delay in their treatment frequently leads to disability, which may be avoided, or at least minimized, by immediate repair.

It is because of the rarity of "buttonholed" extensor expansion, and the necessity for operative repair, that we wish to draw attention to the condition. During the last year we have seen three cases of this injury amongst a large number of conditions of the hand and fingers.

The extensor tendon to a finger as it reaches the metacarpo-phalangeal joint spreads out into an aponeurotic sheet, which covers the proximal phalanx and divides into a central and two lateral bands. The central band is inserted with the dorsal ligament of the proximal interphalangeal joint into the base of the middle phalanx. The lateral bands pass distally, one on each side of the proximal interphalangeal joint, and then converge to be inserted with the capsule of the distal interphalangeal joint into the base of the distal phalanx. The interosseous and lumbrical tendons pass from a more volar plane to fuse with these lateral bands just distal to the metacarpo-phalangeal joint.

Aetiology

"Buttonholed" extensor expansion is an injury which consists essentially of a rupture of the central band of the tendinous expansion as it passes over the proximal interphalangeal joint. The two lateral bands are thereby deprived of their supporting intercommunication, and when flexion occurs at this joint they dislocate volarwards one on either side of the joint, the displacement being increased by the pull of the lumbrical and interosseous tendons. At the same time the head of the proximal phalanx protrudes through the rent in the central band and capsule (see figure).



The injury may be caused by either direct or indirect types of trauma:

A. Direct Trauma.—(i) A cut wound over the flexed proximal interphalangeal joint may divide the central band of the expansion, the lateral bands being protected by the convexity of the bone (Case 1). (ii) A sharp blow over the flexed knuckle may be sufficient to divide the central band by nipping it against the head of the proximal phalanx (Case 2).

B. Indirect Trauma.—Sudden forced passive flexion occurring in an actively extended finger with the extensor tendon taut may rupture the central band just proximal to its insertion into the base of the middle phalanx (Case 3).

Clinical Features

The clinical features of these cases are easily recognized. There is a history of trauma. The proximal interphalangeal joint is swollen and tender, and the finger assumes the characteristic attitude of extension at the distal, and flexion at the proximal, interphalangeal joint. If extension of the finger is attempted hyperextension of the distal phalanx occurs, but, as the lateral bands have passed forwards to the volar side of the axis of the joint and the central band has completely lost its purchase on the middle phalanx, slight increase in flexion takes place at the proximal interphalangeal joint. Passive extension is usually almost complete, and the position can be maintained, but not against resistance, and as soon as flexion occurs the finger becomes once more fixed in the position of the deformity.

Treatment

The treatment is straightforward and should be undertaken immediately. Delay leads to lengthening of the central band by fibrous tissue, and liability to the subsequent loss of full extension. Under a local anaesthetic the tendon is exposed through an L-shaped incision. The head of the proximal phalanx presents through the tear in the central band, and the displacement of the two lateral bands is obvious. The finger is straightened and the metacarpo-phalangeal joint flexed, and after approximating the torn edges of the central band with fine interrupted sutures the two lateral bands are splinted back with one or two transverse sutures passing from one to the other across the central band. This counteracts the pull of the lumbricals and interossei and prevents the forward displacement. The wound is closed and the finger fixed in full extension in a light plaster for four weeks. Thereafter a short course of active exercises soon re-establishes mobility.

Case Histories

Case 1 (male aged 15).—While sharpening a scythe the patient received a small cut over the proximal interphalangeal joint of his right index finger. The finger became flexed and he was unable to straighten it. Ten weeks later he was seen because of persistent deformity and loss of extension. Operation revealed a rent in the central band and dislocation forwards of the lateral bands, the gap being filled with scar tissue. This was dissected out and the tendon repaired with waxed silk thread. The finger was splinted in extension for sixteen days, and then active movements were started. Six months later there is still 45 degrees limitation of extension, though movements through the rest of the range are free. The disability is no doubt due to an insufficiently long period of immobilization after operation, with subsequent stretching of the suture lines. The result is not satisfactory, and further repair has been advised.

Case 2 (male aged 81).—This patient was knocked down by a motor car and received among other minor injuries a sharp blow across the knuckles of his right hand. The skin was not broken, but he found he was unable to straighten the index finger, which presented the typical features described. Operative treatment was carried out three days after the injury, and fixation of the finger was maintained for four weeks. Two weeks later extension was limited by only 10 degrees, while flexion was limited by about 15 degrees. As there was considerable disability from arthritis in the other fingers the result was considered good.

Case 3 (male aged 31).—The middle finger of this man's right hand was caught in the fastening of a sack of oats as it

fell from his back, and was suddenly forcibly flexed. Examination showed flexion deformity at the proximal interphalangeal joint, with marked prominence of the head of the proximal phalanx on the dorsal aspect, and as the finger was passively straightened the middle phalanx became dislocated volarwards. *X*-ray examination verified the subluxation of the joint. The displacement was reduced under gas, and the finger fixed on a Böhler's splint in moderate flexion. Three weeks later, on removing the splint, the subluxation immediately recurred and the joint again assumed the flexed position. Operation revealed the typical buttonhole tear in the central band, but in this case the distal tag of tendon attached to the base of the middle phalanx had become turned in between the articular surfaces and was responsible for the persistence of the subluxation. Repair was carried out as described and immobilization maintained for four weeks. Three months later he has 20 degrees limitation of extension with full flexion and free active movements in both directions. There is no disability in his work as a tractor driver, but the result might have been better had the true nature of the lesion been recognized at once.

We wish to express our thanks to Mr. D. S. Middleton for allowing us to treat these cases under his supervision, and for permission to report them.

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PROTECTION OF THE SKIN AGAINST LIME

BY

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In the last two years I have had occasion to try various remedies and preventive measures for dealing with burns of the skin and eyes caused by lime. The workers in our local industry are engaged in the quarrying of limestone, which is burnt in kilns adjacent to the quarries, various grades and qualities of lime being produced. The kilns are fed at the top with limestone, coke, and coal, and the finished lime and debris is withdrawn from apertures at the bottom of the kilns by hand and also with the aid of rakes. The lime appears in fragments of all shapes and sizes up to pieces perhaps nine inches through the long diameter and weighing several pounds. Skilled workmen are able to detect and remove partly burnt pieces of stone which are known as "bullheads." These latter and the "smalls" are dealt with separately, while properly burnt large pieces are sold at the best prices.

The various products described are loaded into small trucks, which are later emptied into lorries or railway wagons. It is clear that in such procedures large quantities of lime dust and small fragments will be cast into the air. These will settle on the clothes and skin and in the eyes of the workmen, and will be both mechanically and chemically irritating. In addition, wherever lime comes into contact with moisture the exothermic reaction whereby it is slaked may be sufficiently violent to cause considerable burning. I propose at a later date to describe the methods devised for dealing with lime in the eye. I will here confine myself to the treatment of the skin.

Protective Methods

In the past, various methods have been tried to mitigate the damage caused, and protection against wind and weather has been provided wherever possible. Masks are worn to protect the nose, and goggles are available for the eyes. Some of the workers, after an initial period of distress, appear to acquire a certain tolerance to the lime, both in the eyes and in other exposed parts, whilst others need protection most of the time. A piece of material tied loosely over the mouth and nose satisfies many. The protection of the skin itself presents a difficult problem. The handling of lime both dries and hardens the skin to a marked degree, and any perspiration inevitably causes a brisk reaction and local burning. This risk is also present on wet days when gusts of wind blow rain into the loading platforms.

I discovered that many remedies of a fatty nature, such as tallow, lanoline, and olive oil, had been applied to the skin as a protection. These are unsuitable, since they cause lime dust to adhere where previously it would have brushed off, and, in addition, they act somewhat as does theatrical grease paint, by checking the cooling of the skin by insensible perspiration. As a result small collections of sweat are formed which later react suddenly and violently with the lime. In considering these facts I was struck by one factor that appears to have been insufficiently stressed: the rate of evolution of heat when lime meets water. It is clear that if this reaction can be slowed down sufficiently no burning will occur. By a large-scale slaking of lime a temperature of 300° C. may easily be attained. So far as the skin is concerned the most common lesions, apart from a general hardening, thickening, and fissure formation, are small scattered superficial ulcers and more definite burns of larger extent. These, particularly if on the hands and fingers, are very crippling and make work difficult or impossible. Infection may be superadded on the original lesions with an impetiginous picture and perhaps more gross and deep-seated infection, particularly if a fissure has been the portal of entry. The men employed are reasonably clean and healthy, but even if they wash their hands on leaving work these are probably as contaminated as ever by the time they have removed their lime-impregnated clothes at home.

Use of Talc Powder

Though attention to washing facilities helps considerably, it is yet no protection against the burns and sores caused by the lime. To prevent these or diminish their severity I have introduced the use of plain talc powder, which is shaken on the exposed parts from canisters with "pepper-pot" tops. This may be repeated several times a day if necessary.

Before starting this procedure I envisaged the following results:

1. By its well-recognized cooling power talc would reduce the temperature of the skin, thus diminishing sweating.

2. Any rain or sweat would mix with the powder and form a paste, thus reducing the moisture available for reaction with any lime present.

3. The paste, when dried, might form a protective film which would permit lime to make but gradual contact with the skin and its moisture.

The three effects described all serve to slow down the reaction between lime and water so that the heat developed is evolved gradually and burning does not occur. I have even advised the use of powder for the treatment of the scattered sores already described, and this has often healed them without any other remedy. This holds good particularly for the early and relatively uninfected

lesions. My attention was drawn to one important factor: the collars of these workers often become encrusted with a mixture of dried sweat and slaked lime, which has a marked abrasive effect and often contributes to the development of lesions on the neck. The frequent changing of the collar and the use of strips of lint, however, greatly reduce the damage.

It is stated by Antonibon (*Bollettino di Oculistica*, April, 1931) that lime in the eye is damaging both by reason of the hydroxyl ion which causes colliquation of the corneal tissue and also by the action of the calcium ion which, in the first place, is adsorbed on to the protein particles. It is likely that similar changes occur in raw areas of the skin created by and subsequently exposed to lime. Therefore it is not surprising that such sores are slow to heal, and this fact should incite one to use all possible preventive measures.

Several reports have been received from employees describing the benefit they have derived from talc used in this manner.

Clinical Memoranda

Epidemic Catarrhal Jaundice in School Children

A very interesting account of this disease, written by Dr. Lisney (1937), appeared in the *British Medical Journal* of April 3 last. It referred to an epidemic in Leicestershire in 1936. Some further notes of an epidemic in Gateshead may be of interest. The epidemic seems to be similar to the one described by Dr. Lisney and to those referred to by Morgan and Brown (1927) in their account of the disease. At first it was confined to the children in one school, but now several other children have been attacked in various parts of the town. Up to the present thirty-one children have been affected in the school in which the outbreak commenced and thirteen in six other schools.

Incidence

Forty-four cases have been investigated, and all of them are children of school age, except two children too young to go to school and one parent. So far as I know this is the only adult who has been infected in the present epidemic. Of the forty-one school children fourteen are boys and twenty-seven are girls, and the following table shows the age incidence:

Age	Male	Female
5	2	3
6	2	7
7	3	5
8	–	4
9	4	5
10	1	2
11	2	1
Total	14	27

There were only two instances where more than one member of a family was infected. In one of these a school child infected her younger sister and her father.

The epidemic began on January 13, 1937, and still continues (September 25), although fewer cases are now being notified. There is no reason to suspect that the milk or water supply is at fault. The public water supply is filtered and chlorinated, and is above suspicion. The school milk supply is pasteurized, and conforms to the tests for pasteurized milk. It is from the same source as in other schools which are not affected by the epidemic.

All the evidence points to infection by personal contact. It is difficult to estimate the incubation period. The first child to contract the disease left school on January 13 and the second on January 26. After that cases occurred at intervals of three or four days until nineteen children had been affected. Cases Nos. 19 and 20 give some indication of the probable incubation period, for No. 19 left school on March 8 and No. 20 (who could not have been in contact with No. 19 after that date) contracted the disease on April 6 (twenty-nine days after), which agrees with the period of one month given by Dr. Lisney.

Symptoms and Signs

All the cases so far have been slight. The onset is gradual and at first the child complains of slight abdominal pain, with sometimes nausea and loss of appetite. After five or six days vomiting occurs; this has been present in all cases, and in many of them it was very severe. There may or may not be a rise of temperature. A day or two after the vomiting attack jaundice appears, first in the conjunctivae and then spreading to the skin of the face, neck, trunk, and limbs according to the severity of the illness. In some cases it is limited to the eyes and face. In severe cases there is itchiness of the skin. When jaundice appears the faeces become very pale and the urine dark. After about a week the jaundice disappears and the patient is quite well. In nearly all the cases seen the patient when convalescent was stated to eat ravenously. There were no complications.

Bacteriological Investigation

The faeces of seven cases were examined, but revealed nothing of importance except that in one case an atypical non-lactose-fermenting organism was found. In this case the sample was taken before the appearance of jaundice. The urine of two cases was inoculated into guinea-pigs, but in neither case did they show signs of jaundice and no leptospira were found. Bacteriological examination of milk supplied to schools revealed nothing of importance.

Summary and Conclusions

The present epidemic in Gateshead is similar to those referred to above. The disease occurs chiefly in children aged 5 to 10 years, and is spread by personal contact. The incubation period is probably about four weeks. The premonitory symptoms are often slight, and during this period when the child is still at school he is apparently infectious to others, and it would seem advisable that during an epidemic all school children who have attacks of vomiting should be kept at home for four days to see if they develop jaundice.

The above brief account of epidemic catarrhal jaundice at present attacking children in Gateshead is published in the hope that others may also give details of epidemics of the disease in their districts, and particularly in the hope that some method of investigation may be suggested which would lead to the discovery of its causal organism.

I am greatly indebted to Dr. J. Grant, medical officer of health for Gateshead, for permission to publish this short account of the present epidemic of catarrhal jaundice in that town.

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Reviews

VITAMIN CONTENT OF FOODS

Vitamin Content of Foods. A Summary of the Chemistry of Vitamins, Units of Measurement, Quantitative Aspects in Human Nutrition and Occurrence in Foods. By Esther Peterson Daniel and Hazel E. Munsell. United States Department of Agriculture, Miscellaneous Publication No. 275, 1937; obtainable from the Superintendent of Documents, Government Printing Office, Washington, D.C. (Price 15 cents.)

This should prove a very valuable book of reference for all those who are concerned, in an intelligent way, with the vitamin content of foods. The short description of the chemistry of each vitamin emphasizes the fact that the vitamins are indeed chemical entities and not, as many people believed until a few years ago, merely "some form of energy." (The displacement of four methyl groups in the formula for β-carotene is regrettable, but obviously a printer's error.)

It is good to have the account of the International Standards of Reference for vitamin determinations made available to a larger public than would ordinarily have access to it. The international units for the measurement of the vitamins will inevitably become more and more widely used. Various units were used before the international standards became available, but necessarily only as a temporary measure. The change from these units has been a difficulty for everyone concerned, for the earlier units were stated in terms of biological reactions; and, as the reaction to any particular dose of a substance varies in different laboratories and at different times in the same laboratory, a "unit" of activity, so defined, would mean more, or less, at one time than at another, and possibly the difference would be greater still between "units" in different laboratories. The authors of this publication have fully realized this and quoted different workers' findings for the relation between the international unit for each vitamin and the "unit" as defined by some biological reaction, thus emphasizing the point that no really acceptable conversion factor can be used for restating old values in the new values of international units. Therefore, values determined in the more recent units have been so stated and values determined by the old units have retained their old unit value in the tables at the end of the report. As there is no International Standard of Reference for vitamin G (B_2 in Europe), the only unit available was a biological one. No unit of any sort for vitamin E was defined before the writing of this book, so no "E" values of foods have been given beyond the statement that cases of repeated abortion have been successfully treated with wheat-germ oil, and that this vitamin is widely distributed in natural foods. The pellagra-preventing vitamin is treated independently of any particular B vitamin, which is wise, as no one seems to be sure which, if any, vitamin is the pellagra-preventing factor.

Still another difficulty has been valiantly faced by these authors, the question of how much of each vitamin is required by man. They have summarized the results of many workers and given figures from which anyone may judge for himself the minimum, the optimum, and possibly the excess amounts of vitamins for child and adult.

Table I is a general summary of the vitamin content (A, B, C, D, and G) of some 330 different foods, many of them in numerous varieties—for example, about forty varieties of apples, sixty of liver oils, etc.—and most of them under different conditions of storage, etc. Different workers' findings for different samples of the same food have in many cases been given, which is useful, as it gives an indication of the variation in vitamin content which may be met and prevents young workers from thinking that all samples of, say, the same vegetable have the same vitamin content. Table II is a summary of the ascorbic acid content of foods determined chemically and expressed as milligrammes per 100 grammes. A vast amount of work has been done on this subject. Table III is a digest of quantitative values for the vitamin A, B, C, D, and G content of foods which will be found exceedingly useful for workers requiring single values for use in planning or analysing diets.

The authors are to be congratulated on having produced such a reliable and useful book. It will indeed be so much used for constant reference that it would be worth while to have future editions in strong binding rather than the stiff paper cover.

DIATHERMY

Diathermy, Including Diathermotherapy and Other Forms of Medical and Surgical Electrothermic Treatment. By Elkin P. Cumberbatch, M.A., B.M., D.M.R.E., F.R.C.P., with nine collaborators. Third edition. (Pp. 576; 168 figures. 21s. net.) London: W. Heinemann (Medical Books) Ltd. 1937.

Dr. Elkin Cumberbatch's well-known *Diathermy* has now appeared in its third edition in a new and considerably enlarged form. The scope of diathermy has increased enormously since its discovery by d'Arsonval, and in recent years has been further widened by the development of the kindred methods, short-wave therapy, and inductothermy. Believing that it is now impossible for one person to be expert in all its branches Dr. Cumberbatch has obtained the aid of nine collaborators, each of whom has written a chapter on the aspect in which he is especially skilled. This adds considerably to the clinical interest of the book and obviates the criticism often made that the uses of diathermy in surgery and in the treatment of special sense organs have hitherto been described by the electrologist and not the specialist surgeon.

The first section of the present volume is concerned with an account of the physical and electro-technical principles involved in the use of high-frequency currents. The chapter on physical principles is contributed by H. J. Taylor and is very clearly written, but many readers will be tempted to skip the mathematical part and pass on to Part II, where the first section, on diathermy and diathermotherapy, is of real interest. To those who are not already aware of the value of diathermy in gynaecology and in chronic arthritis the two chapters by C. A. Robinson will be stimulating. Another chapter, written by Norman Bell Graham, deals with the treatment of general paralysis by diathermy and inductothermy, which are more easily controlled than the malarial method. A very short chapter, by H. B. Stallard, describes the diathermy apparatus in use at Moorfields Hospital, and mentions, *inter alia*, the very pleasing results obtained in the treatment of acute and subacute glaucoma, pain being relieved at once and the tension lessened to allow of safe operation. In a later chapter the same writer describes the treatment of detached retina by surgical diathermy.

In Section II comes an account of short-wave currents and how they bring about biological effects. One of the advantages in their use is that the patient does not have to be in actual contact with the electrodes, and this facilitates treatment of deep or inaccessible regions. A great disadvantage is that the current in the patient's circuit

cannot be measured. Most readers have heard of Schliephake's successes when he first used short waves in local pyogenic infections. Dr. Cumberbatch has treated a relatively small number of cases of superficial disease with short waves and diathermy, and has come to the conclusion that there appears to be very little difference in the results, but in more deeply situated diseases short-wave treatment is definitely more successful. Inducto-thermy is the most recent of the electrothermic methods, and it is proving to be the best method of inducing artificial fever, as it is much safer and less irksome for the patient and safer for the operators. The remaining third of the book is concerned with surgical electrothermic methods, and includes a chapter by the late Dan Mackenzie on destruction of the tonsils by diathermy, one on the treatment of malignant disease of the upper air passages by Douglas Harmer, and one by Kenneth Walker on electrothermic methods in prostatic obstruction.

The book is illustrated by photographs and diagrams, and has for frontispiece a portrait of Arsène d'Arsonval, now in his eighty-sixth year, who has happily lived to see the widespread application of diathermy and its far-reaching benefits resulting from his years of patient research work.

THE SURGERY OF PAIN

La Chirurgie de la Douleur. By R. Leriche. (Pp. 428: 18 figures. 65 fr.) Paris: Masson et Cie. 1937.

This book by Professor René Leriche is an indexed monograph of some four hundred pages, dedicated to the memory of Charles Nicolle, and based on twenty lectures given by the author in the College of France at the request of M. Nicolle. The preface, which consists of fifteen closely-printed pages, pays tribute to the pioneers in the surgery of pain, Horsley, Weir Mitchell, Abbé, Spiller, Frazier, Cushing, van Gehuchten, Krause, Thiersch, Foerster, Jonnesco, and others. In France Professor Leriche singles out three men who have made important contributions—namely, Jaboulay, Chipault, and Sicard. He points out how pain varies according to the temperamental type of the afflicted subject, and cites the different reactions seen during the great war in men of different nationalities. The men of Napoleon's Grande Armée were apparently but little affected by the pain of their wounds, and certain Cossacks during the great war remained quite quiet and unperturbed while they had amputations performed without the use of any anaesthetic. Leriche distinguishes two varieties of pain, one fixed and related to nervous innervation, the other vague and ill-defined, and associated with vasomotor and trophic disturbances. It is with this latter type that so much of his surgery of the sympathetic nervous system has been concerned.

The nineteen chapters of which this monograph consists are devoted to pain in various anatomical sites, and to questions of its relief. Each chapter is made up of a series of sections with subheadings. These are well separated from each other, and each is complete in itself, so that references in the index are readily found, and are for the most part single. The author states that because of urinary complications following chordotomy he performed in 1928 a new operation, section of the median commissure of the spinal cord, but he has apparently overlooked the fact that Dr. Greenfield at the National Hospital, Queen Square, had suggested this operation some time before this, and in December, 1926, the late Mr. Donald Armour had performed it before the inaugural meeting of the Society of British Neurological Surgeons which took place during that month in London. All Leriche's work, however, has been less concerned with the somatic than the sympathetic nervous system, and in this volume we find a very full survey of his many contributions.

The book is written with all the vigour and enthusiasm of the director of the surgical clinic at Strasbourg. Two of the most interesting chapters are those on angina and on the nature of physical pain. Illustrations are scanty but for the most part clear, and demonstrate the points made in the text. We should like to have seen some more reference to the work of British neurologists, and particularly to Mr. Wilfred Trotter's contribution to our knowledge of peripheral pain. Those interested in the afferent side of the sympathetic system cannot afford to overlook this monograph.

HEALTH PROPAGANDA

Health Education of the Public. A Practical Manual of Technic. By W. W. Bauer, B.S., M.D., and Thomas G. Hull, Ph.D. (Pp. 227; illustrated. 12s. net.) Philadelphia and London: W. B. Saunders Co. 1937.

People in this country who devote themselves to advancing the cause of health must find interest from time to time in comparing their own methods with those adopted by workers in other lands who are engaging the same problem with equal sincerity but under conditions which, almost inevitably, are widely different. All such, we feel sure, will derive guidance, together with some entertainment, from the book on the health education of the public, in which two distinguished members of the American Medical Association show how, in their experience, the population of the United States may be brought to realize the value of health. We have found nothing in the book from which, having regard to the differing circumstances, we feel disposed to dissent. We entirely agree that two health talks a day on the wireless are too much; also that slovenly health exhibits are worse than no exhibits at all; also that the personality of the missioner may often make or mar the message he seeks to convey. We have been interested to learn that some health expositors in America test their pamphlets before issue on ten-year-old children, believing that on this plan they are able to strike a standard which will be within the comprehension of any adult! Among other avenues explored are the public meeting, the newspaper, the cinema, the lantern slide, and the magazine. Under the title Miscellaneous Devices the authors refer, with toleration though without enthusiasm, to the plan of giving a child a shining blue button on which are printed the words "I am Schicked. Are you?" We commend the book to all who have to do with adult health education.

DICTIONARY OF APPLIED CHEMISTRY

Thorpe's Dictionary of Applied Chemistry. By Jocelyn Field Thorpe, C.B.E., D.Sc., F.R.S., F.I.C., and M. A. Whiteley, O.B.E., D.Sc., F.I.C. Fourth edition. Vol. I, A–Bi. (Pp. 703. 63s. net.) London: Longmans Green and Co. 1937.

We welcome the first volume of the fourth edition of *Thorpe's Dictionary of Applied Chemistry*, which is appearing under the editorship of Professors J. C. Thorpe and M. A. Whiteley. This dictionary has been a standard work of reference for many decades, and the need for an encyclopaedic book of this type has been increased by the rapid development of the subject in recent years. The last volume of the third edition appeared in 1927, and two supplementary volumes were issued in 1934 and 1935. The new edition has been completely remodelled and rewritten. It consists of monographs on selected subjects

written by recognized experts, and the list of contributors includes the best known chemists in the country. The range of the subjects covered is indicated by the fact that the list of journals quoted includes about 700 titles.

Perusal of the volume under review, which covers the range from A to Bi, shows that it deals with a large number of subjects of medical interest—for example, acridine dyes, adrenaline, alcohol, alkaloids, amino acids, organic antimonials and arsenicals, barbituric acid, bile acids, and pigments. The prominence of such subjects indicates the increasing importance of biochemistry and chemotherapy. A large proportion of the text is devoted to synthetic dyes, and in this relation it is of interest to note that the cover of the volume is dyed with monastral fast blue, BS. This pigment was discovered in this country, and its discovery has been described as the greatest chemical achievement of 1936.

The editors intend to publish one volume yearly and to use each as a means of bringing previous volumes up to date. The work will therefore form a continuous record of chemical progress. It is an essential reference book for chemists and will be found of great value by workers in medical sciences who require information on chemical problems.

Notes on Books

The Ebers Papyrus has been more than once translated into English but has not previously been considered critically by a member of the medical profession. The translation by Dr. B. Ebbell (H. Milford, Oxford Press, 15s.) is therefore very welcome. He is interested in Egyptology, and he was formerly a county medical officer in Denmark. He dedicates his translation to Imhotep, the great Egyptian physician, rather than to Aesculapius, for he holds, with much truth, that Greek medicine was derived in great part from an older Egyptian tradition. *The Ebers Papyrus* written about 1550 B.C. dealt wholly with medicine; the *Edward Smith Papyrus* written about 1600 B.C. treated solely of surgery. Both are free of the magical element which crept into Egyptian medicine at a later period, and both are based on still earlier writings, or, as we should now say, both are second editions. It is interesting to notice how some remedies have held their own throughout the ages. *The Ebers Papyrus* recommends the use of castor oil, colocynth, and senna as evacuants, teaches that pomegranate root is good against worms, and that tannin-containing plants should be given when astringent remedies are required.

Dr. L. S. T. Burrell has now produced a third edition of his excellent book *Recent Advances in Pulmonary Tuberculosis* (J. and A. Churchill, 15s.). Since the second edition appeared six years ago there has been considerable progress, and this called for the rewriting of a large part of the text. Chapters have been added on infectivity and immunity, on bovine and childhood tuberculosis, and there is a new chapter on classification and types of pulmonary tuberculosis.

Lungentuberkulose in Verbindung mit anderen Erkrankungen—ihre Häufigkeit und Behandlung, by Dr. Klaus Briest (Leipzig: Georg Thieme, RM. 4), will be found a useful little monograph. Its purpose is to summarize recent work, including personal observations by the author, on the frequency with which other diseases are associated with tuberculosis, the influence of each disease on the tuberculous process and vice versa, and the treatment as modified by the presence of the two conditions together. Clinical descriptions, pathological facts, or theoretical considerations are not included. The scope of the book in regard to the number of diseases discussed is, however, very comprehensive, almost every abnormal condition apart from rarities being mentioned. Hence the discussion under each heading is necessarily very brief, except for the more commonly described associated diseases such as diabetes, measles, etc. Several hundred references, classified according to the systems of the body, are a valuable addition to the book.

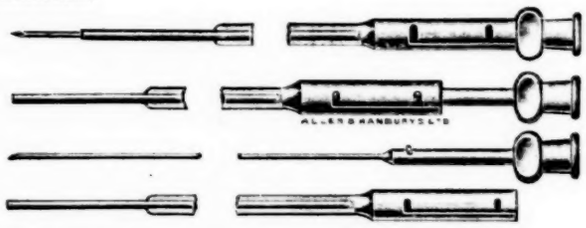
Die Porphyrine, by Dr. Curt Carrié (Leipzig: G. Thieme, RM. 9), gives a good general review of the physiology and clinical importance of porphyrins. Porphyrinuria is a relatively rare condition, and hence the subject is one which has not been studied intensively. The action of porphyrins in sensitizing the skin to ultra-violet light is well known, and the author shows that they also affect the response of the skin to Grenz-strahlen, since these rays produce depilation more readily in an animal poisoned with porphyrin than in a normal animal.

Preparations and Appliances

A MODIFIED FINSTERER'S NEEDLE

Mr. Charles E. Kindersley, F.R.C.S. (Bath), writes:

The splanchnic needle illustrated has been made for me by Messrs. Allen and Hanburys, and embodies certain features which may be of advantage to those using splanchnic anaesthesia.



The insertion of Finsterer's needle alongside the gloved hand often leads to perforation of the glove and possibly injury to a vessel. The needle illustrated has a loose sharp needle running inside a blunt sheath, and is controlled as to position inside the sheath by a double bayonet joint. In one position the needle does not project from the end of the sheath, and in the other is of the same dimensions as Finsterer's needle. The sheath is flanged to enable it to be held firmly in the hand while operating the bayonet joint and pushing the sharp needle forward through the posterior peritoneum. The blunt end of the sheath is applied firmly to the vertebra, and damage to the aorta, vena cava, or other vessels is practically impossible. I have found since using it that the induction of splanchnic anaesthesia is more simple than with the unguarded needle.

HAEMATINIC COMPOUND IN CAPSULES

Plastules brand of haematinic compound (John Wyeth and Brother Ltd., 25, Oldhill Place, N.16) contain ferrous iron (5 grains $FeSO_4$) and yeast concentrate (3/4 grain). The plastules are flexible gelatin capsules, and it is claimed that the inclusion in a sealed capsule prevents the oxidation of the ferrous iron, whilst the capsules disintegrate rapidly in the stomach. It is generally agreed that it is preferable to treat anaemias with moderate doses of ferrous salts instead of massive doses of ferric compounds provided that a stable preparation of the former can be obtained. The yeast concentrate is added to provide vitamins B_1 and B_2 and cytochrome.

Plastules brand haematinic compound with liver extract contain the constituents mentioned above with the addition of 2.62 grains liver extract. This combination has been prepared for the use of those who believe that small doses of liver extract increase the therapeutic action of iron in hypochromic anaemias due to such causes as nutritional deficiencies and haemorrhage.

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THE HAEMORRHAGIC STATE

The fact of the clotting of shed blood is so much a matter of everyday common experience that it is accepted as a natural phenomenon without need for explanation, though even lay people are aware that failure to clot may be followed by serious trouble in "bleeders." When the process is subjected to further investigation, however, it is found to consist of a complicated series of physicochemical changes, the nature and sequence of which are by no means capable of clear description by physiologists. When a break in the sequence occurs as the result of some inherent or added pathological defect a group of disease phenomena can be recognized, known as the haemorrhagic state or haemorrhagic diathesis; and a beginning of differentiation may be possible among this group. Even without a clear pathological basis for differentiation a body of clinical experience has grown up empirically which enables a working classification to be adopted.

The established facts of the physiology of blood coagulation are easily stated and are essentially those used by Morawitz in his theory of coagulation enunciated in 1904. The process consists of two stages: first, the formation of thrombin from its precursors; and, second, the conversion of fibrinogen to fibrin under the influence of thrombin. The precursors of thrombin are prothrombin, calcium ions, and a tissue element derived from the blood platelets or endothelial cells (thrombokinase, cytozyme). Recent work has shown that trypsin and certain proteolytic snake venoms can replace the calcium and platelets, and alone can activate prothrombin to thrombin. In most of the theories of coagulation, and they are numerous, it is accepted that the prothrombin and calcium and thrombokinase unite chemically to form thrombin. They and fibrinogen are all present in the circulating blood, and one major difficulty in any theory of coagulation is to say why the blood remains fluid in the blood vessels. It has been postulated that there is an antithrombic action of the plasma or that a protective substance is produced, perhaps in the liver (heparin). In certain pathological conditions intravascular clotting may take place, initiated by the agglutination of blood platelets at foci of irritation on the vessel walls. More commonly there is extrusion of blood from the vessels into the tissues or to the exterior. These conditions of increased bleeding may follow sepsis or be associated with jaundice, with lack of vitamin C, in anaphylactic states, or may be idiopathic, the last constituting the essential haemorrhagic states.

The underlying pathological condition is by no means certain. In some septic states there may be disorganized permeability of the capillary wall without alteration of the bleeding time, the coagulation time, or the precursors of blood clot; in others these may be affected through changes in the bone marrow secondary to bacterial toxins or chemical poisons. The importance of avitaminosis in scurvy is well known, and there are indications that a subscorbutic state may be present in many patients owing to relative deficiency of vitamins. Recent work suggests that the bleeding tendency sometimes observed in jaundice may be due to deficiency of prothrombin, while in states of anaphylaxis there is often a considerable increase in the antithrombic activity of the plasma. In haemophilia, in which the clotting time is delayed while the bleeding time is normal, there is a delayed elaboration of thrombin; apparently this is not the effect of a lack of thrombokinase but of an abnormal platelet stability or inhibition of thrombokinase production from the platelets. Patients with thrombocytopenic purpura have a haemorrhagic tendency in spite of the fact that enough platelets are circulating to make the blood clot *in vitro* almost within normal time, but the bleeding time is delayed and the clot formed retracts slowly.

It will be seen that there are difficulties in expressing the underlying pathological states in this group of diseases, and in opening the subject at the recent Annual Meeting of the British Medical Association at Belfast Professor L. J. Witts felt that more value would be obtained from the discussion if it were dealt with pragmatically. His address is published in the *Journal* this week at page 689. In a critical discussion of modern advances of knowledge and of the recent literature of the subject Professor Witts is able to point out much valuable information that has accumulated, particularly in regard to those haemorrhagic states which are secondary. The great advance of the last decade in the haemorrhagic diseases has been the separation of scurvy as due to deficiency of vitamin C and the isolation and synthesis of vitamin C or ascorbic acid. As is usual with any new and successful remedy, it has been applied in the treatment of a number of diseases quite outside those of the haemorrhagic state. Fortunately the

amount of vitamin C in tissue fluids can be estimated accurately, and tests have been devised to assess the needs of the body for vitamin C. It is thus possible to show clear indications for its use, to judge the dosage, and, more important, to prevent its use in conditions where no benefit can accrue. The problems of hereditary or idiopathic forms of the haemorrhagic state have not yet been susceptible of solution. It was long thought that the spleen played a part with the bone marrow in their aetiology. Splenectomy was successfully carried out in many cases, though relapses may occur, suggesting that this should not be regarded as a specific cure for the disease.

The discovery that trypsin causes the coagulation of citrated plasma has had practical application. The mechanism is apparently that trypsin converts prothrombin into thrombin, just as the calcium-platelet compound does in the ordinary process of coagulation. The second stage of clotting then follows, when thrombin converts fibrinogen into fibrin. Trypsin is a proteolytic enzyme, and in excess will digest the fibrinogen, rendering it incapable of coagulation by thrombin subsequently added. It was discovered later that certain snake venoms known to contain proteolytic enzymes, and known to cause the coagulation of blood or plasma, also transform prothrombin to thrombin. In some cases the venoms are effective in extraordinarily high dilution, 1 : 1,000,000 or more. In clinical application loose clot is washed away from the bleeding point and tampons soaked in the venom solution are applied. This appears to be a more workable method of treatment than the application of clotting healthy blood. Without clear indications treatment of the haemorrhagic states must remain crude and ill directed. Readers will welcome therefore the useful paper on the clinical pathology and methods of investigation of these cases, which Dr. Dyke contributed to the Belfast discussion and which is reproduced in full at page 692.

PORT HEALTH ADMINISTRATION

Efforts to prevent the spread of contagious disease from country to country by sea-borne commerce was first made at the time of the Black Death in the middle of the fourteenth century, when Venice, which then had a thriving trade with the East, instituted the system of quarantine for ships, passengers, and goods from plague-infected ports. This system of isolation for forty days was copied by other Mediterranean ports and gradually by most of the maritime countries in both hemispheres. That it failed in its purpose is evidenced by the fact that bubonic plague was spread by shipping throughout the world, but it continued to be the accepted practice for more than 500 years, because, in the absence of knowledge of the aetiology of plague, no other method of control could be suggested; indeed, from the beginning of the nineteenth century the system was extended to cholera and yellow fever. It is obvious that as international trade developed and the speed of ships increased quarantine became a more and more intolerable burden, and this country, with its great shipping interests, was the first to discontinue it; but not until the discovery of the cause and mode of spread of cholera and plague was it possible to obtain international agreement on a system of control at the same time more efficient and less restrictive than quarantine. Now procedure is regulated by the International Sanitary Convention of 1926, which has been ratified by practically all the maritime countries, and which is based on the medical inspection of ships on arrival, subsequent action being governed not by the health conditions in the ports of departure and call but by the medical history of the voyage and the health conditions existing on board the ships themselves.

In the British Isles these duties have since 1872 been discharged by Port Sanitary Authorities, which from October 1 of this year will be known as Port Health Authorities. The change of title has been made because of the limited significance popularly attached to the word sanitary and of the increased scope of the work of the Authorities, which began with the prevention of the importation of cholera, plague, and yellow fever, and has been extended to include the control of all imported infectious sickness, rat repression in ships and on shore as a plague-preventive measure, supervision of the hygiene of living accommodation in ships, inspection of imported foods, control of the importation of parrots as a safeguard against psittacosis, smoke abatement, inspection of canal boats and of water boats, control of shellfish layings, and the general sanitary supervision of the port area. The amount and importance of the work of a Port Health Authority may be appreciated from a glance at the annual report of the Medical Officer of Health for the Port of London for the year 1936. The Port of London extends throughout the tidal portion of the River Thames from Teddington Lock to east of the Nore Lightship, nearly seventy miles. There are in addition over forty-five miles of dock quays. The tonnage of ships entering the port during 1936 was over thirty millions; 2,397 vessels were boarded by the medical officers and 15,531 by the sanitary inspectors; 215 vessels were reported as having or having had infectious disease on board during the voyage. Many of these cases were landed abroad or convalescent on arrival, and

only sixty-six cases were admitted to the Port Health Authority's isolation hospital situated on the south bank of the river about a mile below the boarding station at Gravesend. The boarding medical officers, of whom there is always one on duty night and day throughout the year, are comfortably accommodated on a hulk lying in the river at Gravesend and connected to the shore by telephone, so that wireless messages received from ships via the North Foreland radio station can be communicated promptly to the medical officers. A sturdy ambulance launch, with Diesel engines of some 200 horse power and capable of a speed of eleven knots, lies alongside the hulk ready to take the medical officer off to ships and to remove cases of sickness ashore. Strictly speaking, the Authority is only responsible for the control of infectious disease, but because its officers are so readily available they are often called upon to give assistance to urgent cases of non-infectious sickness and accidents.

Quarantine is a thing of the past, and the modern method is to facilitate, so far as possible, the movements of ships, passengers, and goods. In this connexion an article in the current report on the surveillance of contacts shows the extreme care that is necessary in checking the destinations of passengers and members of crews who are contacts with such an infection as small-pox in order to secure that they shall be kept under the supervision of the medical officers of health of the districts to which they are proceeding. The hygiene of crew accommodation in British ships has for many years engaged the attention of Port Sanitary Authorities, who have made repeated representations to the Board of Trade as to the need for higher standards. When the report was in course of preparation it became known that the Board of Trade was about to issue new instructions to its surveyors, who are responsible for the supervision of the plans and construction of crew accommodation in new ships. The medical officer of health therefore refrained from repeating former criticisms and awaited the revised instructions (which have now been issued), but he calls attention to the unsatisfactory arrangements for the feeding of crews of coasting vessels, which are often very hard run and in which the crew ration themselves and cook their own meals.

The inspection of imported food is an important part of the work of the Port Health Authority. Inspection must in the first instance be worked on a principle of sampling, but experienced food inspectors know what is of established reputation, what has been doubtful or unsatisfactory in the past, and what is new and therefore to be carefully checked. In this way control is much closer than would appear possible in view of the enormous quantity and variety of foods which enter the port. During 1936 no less than 3,288 tons of foodstuffs were condemned as unfit for human consumption, and were either destroyed or disposed of for industrial purposes. An article on the inspection of canned foods explains in detail the procedure by which an inspector—by the methods of inspection, palpation, percussion, and auscultation familiar to the physician—judges by external examination the soundness or otherwise of canned foods.

Space will not permit of reference to other matters of interest in this report, but it is worthy of mention that the medical officer of health, Dr. Charles F. White, records the terms of a resolution in regard to shellfish which has been submitted to the Ministry of Health by both the Association of Port Sanitary Authorities of the British Isles and the British Medical Association. The resolution is as follows:

"That the present system of control of shellfish layings by closure is unsatisfactory as a public health measure and ruinous to the shellfish industry; that it has now been proved that shellfish can be efficiently cleansed by relaying in the case of oysters and mussels, and by steaming in the case of cockles and winkles; that the necessary apparatus can be established and operated on a self-supporting basis; and that, therefore, the time has now arrived when legislation might be introduced with advantage to both the public health and shellfish industry, requiring that only such shellfish (whether home produced or imported) as are certified by a responsible authority to have been cleansed in this country by an approved method in a recognized establishment should be sold for human consumption."

A NEW IDEA IN ASEPSIS

No surgeon escapes occasional disasters due to the infection of clean operation wounds. This danger is all the more to be guarded against the greater the extent of the operation site, and since advances in surgery often increase this an increase in the precautions taken to prevent such infection becomes ever more desirable. Thoracic surgery now leads the way in exposing really extensive tracts of tissue to possible infection, and thoracoplasty seems to have been the chief problem in asepsis which led Hart[1] to investigate the sources of accidental contamination and their possible prevention. The wound infections which it was hoped to prevent were mainly due to *Staphylococcus aureus*, and although these are commonly attributed to organisms previously present in the skin itself Hart denies this. He found by exposing culture plates that the air of an operating theatre contained staphylococci in considerable numbers, supposedly derived from the throats of the occupants, since carriers, as might be expected, were often present; and although their numbers could be diminished to a certain point by reducing the theatre personnel, by excluding known carriers, by masking, and by alterations to the system

[1] *Arch. Surg.*, Chicago, 1937, **34**, 874.

of ventilation, the air was still contaminated and wound infections still occurred. He therefore persuaded a firm of electrical engineers to construct a multiple lamp emitting bactericidal light rays. The constructional details of this lamp are not divulged, a fact for which the manufacturers can hardly be blamed, since it is said to kill staphylococci at five feet range within one minute and at even greater distances in longer periods, although the rays are harmless to skin and to wounds. By using this lamp the air of the theatre was kept almost completely sterile within a radius of eight feet from the operation site, and wound infections were entirely prevented. This device evidently has a considerable future. At the same time one may wonder whether the mechanism by which air becomes contaminated with cocci is fully understood, and whether some precaution other than what will doubtless be a very expensive piece of apparatus might not serve to prevent this. Do these cocci, which are said to re-invade the air soon after the lamp is switched off, really come from the upper air passages, and, if so, how?—assuming that an impermeable type of mask is being used. No one has ever suggested that mere breathing can expel bacteria; if silence were enforced and mouths kept shut, would the air remain free? The author's investigations have been exhaustive, and nothing stands in the way of accepting his conclusions except the difficulty of believing that "droplet" infection can wholly account for the rapid pervasion of air by bacteria when every known precaution is taken to prevent it. That nose and throat carriers of haemolytic streptococci, and no doubt of staphylococci, can be a serious danger there is no denying, but the impunity with which they are sometimes employed or disregarded suggests that there is something still to be found out about how their bacteria reach the patient.

INDUSTRIAL HEALTH RESEARCH

The seventeenth annual report of the Industrial Health Research Board[1] indicates that the work of the Board is not only continuing on the lines described in earlier reports but that it is branching out widely in a number of fresh directions. Among the most interesting and important of these is the large-scale investigation—statistical, clinical, and environmental—which has been initiated by the Medical Research Council into silicosis. Certain coal mines have been chosen in which there are notable differences in the incidence of silicosis, both certifiable and non-certifiable, and in these each underground worker will be examined, clinically and radiologically, while at the same time investigations will be made on the dust in the pits, the temperatures, the humidities, and other conditions. Another investigation, and one of general public interest, relates to transport accidents. The accident records of groups of motor drivers during the last six years have been collected and analysed, and the men have been given psychological tests in relation to accident-proneness. Also a special apparatus has been constructed for testing the effects of alcohol consumption on the speed of drivers. The investigation is being extended to flying accidents in order to determine the practical value of the tests for the prognosis of accident-proneness among air pilots of the Royal Air Force. Several investigations on occupational fitness are in progress, the most novel of them relating to art and industry. It is found that many pupils take industrial art courses lasting four or five years, at the end of which they are not even good technicians, and the problem to be solved is to find tests which pick out the unsuitable pupils at an early stage of training. Of the other psychological problems under investigation one relates to the reduction of boredom in industrial workers and two others to the extent of the nervous temperament in industry. The physiological researches include a determination of the light desirable in the weaving of worsted cloth. It was found to be as high as 30 foot-candles on the cloth itself, and still higher at certain parts of the loom. An ophthalmological report on operatives engaged in close work on comptometers showed that about half of them required correcting glasses for their work. The investigations on heating and ventilation include one on warmth and comfort, another on stimulating air environment, and a third on the measurement of the rate of air change in rooms. Researches on noise and other subjects might be mentioned if space permitted. Both individually and collectively they bear striking testimony to the continued vigour of the Board's investigators.

[1] Medical Research Council. Seventeenth Annual Report of the Industrial Health Research Board. London: H.M. Stationery Office. 1937. (9d. net.)

TRAUMA OF THE BRAIN

The ever-increasing number of street accidents continues to provide the medical profession with abundant material for clinical and pathological study. A recent contribution by C. P. Symonds[1] deals with the important question of mental disorder following head injuries, which was also discussed at the Section of Neurology and Psychological Medicine at Belfast. A careful investigation into the histological basis of concussion has been undertaken by Schaller, Tamaki, and Newman,[2] who examined a series of brains from cases in which death had ensued at varying periods after cerebral trauma. They found that in all cases deep petechial haemorrhages were present which could not be explained by a traumatic tearing of the vessels. These petechiae were not seen in the cerebral cortex except in one instance, the only one in which rupture of the vessels could be demonstrated in relation to the haemorrhages. In general, the petechiae were found in the corpora striata, the midbrain, and the pons, and in some cases in the cerebellum. They were more often seen round the arterioles than round the capillaries, and it was therefore suggested that the primary effect of the trauma was on the vasomotor innervation. The appearance of the blood vessels in cases with different survival periods suggested the following sequence of events: dilatation of the vessels and diapedesis of blood cells (causing perivascular petechiae), followed by degeneration of the walls of the vessels, stasis, and subsequent throm-

[1] *Proc. roy Soc. Med.*, 1937, **30**, 1081.
[2] *Arch. Neurol. Psychiat.*, Chicago, 1937, **37**, 1048.

bosis. Fat emboli, which had been regarded as playing an important part in the production of petechial haemorrhages, were rarely seen. Ring haemorrhages, which were observed in cases where the patient had survived several days, were interpreted as a late stage in the formation of petechiae, active diapedesis having ceased and stasis having occurred in the vessel, the extravasated blood being forced into the tissues by an accumulation of tissue fluid in the perivascular space. When petechiae are limited to the perivascular spaces they may be completely absorbed and perfect recovery from concussion may take place, but if the haemorrhage goes beyond the perivascular spaces into the brain parenchyma, degeneration of cells, demyelination, and subsequent gliosis will follow, as in haemorrhage from a ruptured vessel, and irreparable damage to the brain will result. Finally it is stressed that these deep petechial haemorrhages are essentially associated with concussion and serve to differentiate it pathologically from contusion of the brain.

"PARAGOITROUS" AFFECTIONS

A recent survey of the goitrous areas in Rumania by Dr. Danielopolu, aided by some of his colleagues,[1] has led to some interesting but disturbing results. He is of opinion that for Rumania goitre, perhaps even more than syphilis and pellagra, is a factor making for racial degeneration. His general classification of thyroid disorders need not detain us, as it does not differ materially from that generally adopted in this country, but the evidence he adduces of the existence of a group which he terms "paragoitrous affections" occurring in goitrous areas calls for attention. Under this term he includes arrest of growth, idiocy, mental deficiency, stammering, and other disturbances of speech and of hearing sometimes amounting to deaf-mutism. They may appear without the ordinary signs of hypothyroidism, but their prevalence in the areas where goitre is endemic, their association with goitre, myxoedema, and cretinism, mark them as of thyroid origin. That bad conditions contribute to the thyroid disorder and these associated syndromes is demonstrated by the fact that in orphanages, even in the districts where goitre is endemic, only slight enlargements of the gland were seen, good food and hygienic surroundings having raised the resistance of the inmates against the inroads of more serious mischief. As might be anticipated, the worst districts are mountainous, where the diet chiefly consists of maize, fermented apples, and prunes—potatoes and haricot beans, meat and eggs being rarely obtainable. The dwellings were bad and ill lighted. Hyperthyroidism, on the other hand, was met with only in the towns and usually among those living under favourable conditions of nutrition and hygiene. His paper is illustrated by a number of striking photographs showing large goitres such as were formerly so much more prevalent in Switzerland and Derbyshire than they are to-day. But the most distressing illustrations are those depicting the familial incidence of the paragoitrous syndrome: thus in one group both parents are goitrous and semi-idiots, two children are normal, while four are deaf-mute cretins. In another the mother is goitrous and semi-idiotic, while all five children are deaf-mute cretins. Maps of different districts indicate some communes in which nearly every house has some goitrous occupants, not infrequently five or six. His whole survey reveals an alarming state of affairs which could be greatly alleviated, as it has been in other parts of the world, but which if neglected must seriously imperil the nation.

[1] *Bull. Acad. Méd. Rumanie*, 1937, **3**, 33.

THE FORAMEN OF MAGENDIE

Since papers on the foramen of Magendie continue to appear we may well ask with Quintus, the son of the old Titus Andronicus, "What subtle hole is this?" Ever since Magendie's original description in 1828 enterprising anatomists, embryologists, and surgeons have been wont to exclaim, as did Saturninus, "I'll see what hole is here," and investigate this region of the brain. The latest contribution is from the pen of Professor J. T. Wilson,[1] who in 1906, in what is now a classical paper on the anatomy of the calamus region of the human bulb,[2] threw light on the formation of the opening and its relations and now writes on its nature and mode of origin. This foramen has for long given rise to controversy, and as recently as 1930 Sir John Bland-Sutton stated that there was no agreement among anatomists in regard to it.[3] Sir John, like Virchow, Reichert, Kölliker, Cleland, and Mackay[4] and others looked upon it as an artefact produced by dissection, and only quite recently we have heard a distinguished Continental anatomist deny its existence. In 1923 Bland-Sutton wrote, "This foramen has had such charm for teachers that it maintains a place in textbooks although sealed up by practical anatomists many years ago."[5] To this Professor Wood-Jones replied, "As a teacher I fully admit the charm of this foramen, and as a practical anatomist I also regard it with affection, for of its presence in the undisturbed condition of the roof plate of the fourth ventricle I have no doubt whatever."[6] Nowadays neuro-surgeons have frequently to examine the suboccipital region of the human brain and are in no doubt as to the normal presence of the opening. Indeed, in certain cases of non-communicating hydrocephalus in which the roof of the fourth ventricle is closed over, it is necessary to make an artificial foramen of Magendie in order to release the cerebro-spinal fluid into the basal cisterns and subarachnoid spaces. In 1930, as a result of observations made in both the operation theatre and the dissecting room, attention was drawn to the undoubted presence and large size of the normal opening by Lambert Rogers and C. M. West,[4] and though Professor Wilson in his recent paper disputes certain parts of the description given in their paper, there can no longer be any doubt of the normal existence of a large opening in the roof of the fourth ventricle which constitutes the foramen of François Magendie.

[1] *J. Anat.*, London, 1937, **71**, 423.
[2] *J. Anat. Physiol.*, 1906, **49**, 210 and 357.
[3] *On Faith and Science in Surgery*. London: Heinemann. 1930.
[4] *J. Anat.*, London, 1931, **65**, 458.
[5] *Lancet*, 1923, **1**, 1143.
[6] Ibid., 1923, **2**, 486.

DAYLIGHT AND WORK

Whether a room is suitable for work of a particular kind depends, among other things, on how much daylight it receives, unless indeed we are to follow the lead of some artificial lighting enthusiasts who would abolish windows and give us uniform air-conditioning and lighting. Since we still like daylight it is important to know how much of it is required for different kinds of work. One way of determining this is to measure the illumination at the instant at which a worker switches on the artificial light because he finds that the daylight is not enough. More important still is the effect of what is customarily enjoyed on what is demanded as a minimum—in other words, does a worker by the window demand a higher minimum illumination than a colleague who works at the back of the room? In a report issued by the Department of Scientific and Industrial Research, entitled "Daylight Illumination Necessary for Clerical Work,"[1] Mr. L. H. McDermott describes a series of ingenious experiments designed to obtain answers to the questions. The experiments were conducted in a room in a Government office where there were seventeen typists, each of whom had a separate desk lamp. Immediately a typist switched on her lamp the current through it automatically actuated a cinematograph camera, which took photographs of the scales of instruments recording the daylight at that moment. From these data it was possible to infer the daylight illumination at each desk when the light was switched on. From a large number of such records, assuming the subjects of this investigation to be average individuals and working under average conditions, it appears that the value of the illumination at which in general they found they needed additional light was approximately 5 foot-candles. These results can be applied to determine the average "lighting-up time" at any season of the year for any specified point in a room, given the daylight factor for that point and data concerning the variation of outdoor illumination throughout the day at all times of the year. The latter have been accumulated at the National Physical Laboratory at Teddington from recordings over several years with a photo-electric apparatus. The results express in the form of curves the mean daily variation of daylight illumination for each month of the year and the period for which daylight will on the average suffice for positions of different daylight factors.

TRACHOMA AS A RICKETTSIA

The failure to confirm the claims of different observers for some organism or other, including that for Noguchi's *Bacillus granulosis*, as the causative agent of trachoma, has focused attention of late years on the virus rather than on the microbe, and a good deal of evidence has accumulated in this direction. Important work by von Szilly[1] in 1935 on the results of inoculating the vitreous with trachoma material showed in a striking way that follicle formation was indeed a characteristic feature of the causative agent of trachoma. Busacca[2] in Brazil and Cuénod and Nataf in Algeria have been concentrating on the possibility of trachoma having a similar origin to typhus, since the epidemiological conditions of the two affections are similar. Much attention having been given to the Rickettsia in the aetiology of typhus, these observers applied the same approach to trachoma. In two recent summaries of their work Cuénod and Nataf[3] point out that the granular dots found in trachoma debris, sometimes in a free state and at others as the Halberstaedter-Prowazek inclusion bodies, must be regarded as the result of actual lysis of epithelioid cells and not as bits of cells produced by the mechanical act of crushing the trachoma follicle. They consider that these dots contain the actual infecting agent; though they are too small to allow of differentiation by the microscope, they have certain morphological characteristics that can be studied, and, what is more important, they have the biological behaviour of a causative agent of infection. For one thing, when laboratory-bred lice, which are free from intestinal parasites, are infected with trachomatous material, real cultures *in vivo* of Rickettsia can be obtained in their intestines: furthermore, experimental infection of the monkey by such cultures produces trachoma. Their experimental procedure was as follows: trachoma material was collected from a patient and injected into the testicle of a guinea-pig, a culture of Rickettsia being obtained in this manner; lice were infected with this culture, and after the infecting material was passed through a series of lice it was finally inoculated into the conjunctiva of an ape, which developed clinical trachoma. This ape in turn was used to infect another. A further experiment consisted in infecting the conjunctiva of a blind human eye with Rickettsia cultured in lice; this was followed by clinical trachoma, confirmed by the usual laboratory and biomicroscopical tests. Other observers have been working on similar lines. Additional evidence of an experimental type is supplied by Poleff, in Morocco. In his most recent communication[4] he describes the findings of Rickettsia, as shown by passage through carriers in an undiminished infecting capacity, in the pannus of trachoma. The accumulated evidence is imposing. Should these findings be confirmed a controversy that has raged for over thirty years on the significance of inclusion bodies in trachoma will find a ready solution.

Mr. Leslie Paton of London will receive the Mackenzie Medal and deliver the Mackenzie Memorial Lecture at Glasgow on Friday, October 29, in the Hall of the Royal Faculty of Physicians and Surgeons, 242, St. Vincent Street, at 8.30 p.m. The subject is "Optic Neuritis."

We regret to announce the death of Dr. William St Clair Symmers, emeritus professor of pathology in Queen's University, Belfast.

[1] *Daylight Illumination Necessary for Clerical Work*. Department of Scientific and Industrial Research. Paper No. 19. London: H.M. Stationery Office. (6d.)
[1] *Klin. Msbl Augenheilk.*, 1935, **94**, 1, 320, 753; **95**, 173, 433.
[2] Fourteenth Internat. Congress Ophthal., 1933, **3**, 2–3, 37.
[3] *Brit. J. Ophthal.*, 1937, **21** 309; *Rev. internat. Trachome*, 1937, **14**, 117.
[4] *Presse méd.*, 1937, **45**, 800.

ANAESTHESIA IN GENERAL PRACTICE

This is one of a series of articles, contributed by invitation

PRE-OPERATIVE TREATMENT AND PREMEDICATION

BY

R. MACHRAY, M.B., B.S.

The present article outlines the measures that it is desirable to take in the preparation of a patient for operation in so far as these come under the control of the anaesthetist. The extent of preparation necessary or possible will naturally vary widely, but the guiding principle should be that the patient comes to the theatre in the best possible condition of physical health and mental rest, so that he will the better be able to resist the disturbances that the disease, its operative treatment, and the anaesthetic produce. The period, therefore, between the decision to operate and the operation itself should be utilized with this in mind.

General Rules

The length of time devoted to pre-operative measures will vary with the urgency of the operation. When circumstances allow, it may be advisable for the patient to spend several weeks of easy life in pleasant surroundings with special attention to diet and sleep. There will be cases in which, although the need for operation is urgent, a better result will be obtained if prolonged and complete rest in bed with appropriate medical treatment is enforced. Such conditions may arise from the nature of the disease itself or from some intercurrent affection. It is obviously wise to postpone until better weather operating on patients who are "chesty every winter," and, in general, extremes of temperature and fog should be avoided. Dental sepsis has a definite influence on pulmonary complications. It should therefore be eradicated if there is sufficient time for any possible reaction to subside; otherwise much may be done with brushing and mouth washes. These questions are usually outside the anaesthetist's province, but if the anaesthetist is also the general practitioner they will need consideration.

Coming now to more immediate measures, adequate rest and opportunity for an unhurried preparation are essential, while the early morning, say 8 to 9 o'clock, is the best time for the operation itself. These things can best be arranged for in most instances if the patient enters the nursing home early the previous evening; after a good night's sleep he then has not to wait long for the final preparation before basal narcosis or the anaesthetic itself is begun. In formidable operations and where lengthy preparation is necessary, and in the case of the old and feeble, more time should be allowed and there should be a complete absence of hurrying. Such a course will always be found worth while. In comparatively trivial operations, however, it is permissible for the patient to enter the nursing home only a few hours before the operation, if this takes place in the afternoon.

Purgation

Where no action of the bowels will take place for two or three days, as in abdominal operations, it is obviously desirable that the alimentary canal should be reasonably empty, and in other cases it will usually make the patient more comfortable. But this emptying should be done by the most gentle method possible and vigorous purgation avoided. Many of the drugs employed are mucosal irritants and not only will produce diarrhoea and a disturbed night but will increase the post-operative discomfort and favour subsequent distension. Another objection is that vigorous purgation will tend to dehydration and acidosis. Frequently the patient will be able to say which aperient and what dose suit him best, and also how long it takes to act: the last is important, as an unbroken night must be assured and the bowels must be opened at least three hours before operation. A suitable purgative is infusion of senna. Sometimes the least disturbing results will be obtained from a combination of mild purgation and an enema. An enema alone will be indicated in two circumstances: first, when there is insufficient time for an aperient to act (although the patient can be instructed to take it at a suitable time before entering the nursing home); secondly, when avertin is to be given. Here success depends so much on complete retention that, unless several hours can elapse after the action from the purgative, it is unwise to risk an irritated bowel and better to rely on a skilfully administered soap-and-water enema. Even this should be given four hours before the administration of avertin. Pelvic operations need a more elaborate preparation, which is usually dictated by the surgeon.

Value of Glucose

Where dehydration and starvation are present the loss should be made good by giving saline and glucose, by the rectal route if necessary. Pre-operative glucose is valuable in the prevention of post-anaesthetic acidosis. It should be prescribed especially when there is any evidence of deranged liver function and when previous anaesthetics have been followed by much vomiting. In normal cases it probably has no effect, but since it also has no ill effect it should be given in all cases except the most trivial. Recommended doses vary widely, but probably two to three ounces confer the maximum benefit and should be taken in lemonade with the evening meal. Diabetic patients will need special treatment and a dosage of insulin and glucose, worked out for each case.

Sleep

A good night's sleep is of great importance, and there will not be many patients who can manage this without assistance. A sleepless night will not only cause great mental distress but will be wearing to the patient's physical condition. Even if he has been sleeping well previously it is better to order a sedative. The drug and dose will vary with the temperament, but adequate dosage is essential. Here, again, the patient may be able to suggest a drug that suits him or, what is more important, drugs that have no effect or are upsetting. Aspirin and bromides are of help but not certain enough for routine use. Nembutal, grains 1½, is reliable, and may be combined with aspirin, grains 10. Medinal grains 5 to 7½ is more powerful but does not suit everyone. The patient should retire to bed before 10 p.m. and immediately take the sedative, and he should sleep until about 5 to 6 o'clock. If he wakes early and feels hungry he should be allowed a cup of tea and

biscuits. It may be mentioned that should the operation be timed for later in the day light meals can be taken until as late as possible—say, until three hours before. Hunger is bad and starvation may lower the liver glycogen.

Small children will as a rule sleep well with a certain amount of coaxing, but if their surroundings disturb them, and especially if they know they are to have an operation, sleep may be impossible without help. Chloral is a useful sedative in doses of 1 grain for each year of life, with syrup. aurantii 30 minims and water to 1 drachm.

Premedication

Several factors need to be considered in deciding what drugs to use for premedication—the temperament of the patient, his general condition, and the anaesthetic it is proposed to employ. The indications for some form of pre-operative sedation fall into two categories. The first is the removal of the unpleasant sensation of being taken conscious to the theatre and there being anaesthetized with something evil-smelling over the face. Even the placid who seem to approach operations with equanimity may suffer much mental distress, while with nervous patients the removal of this dread may be an important factor in the success of the operation. A pre-operative sedative will also reduce the amount of inhalational anaesthetic required, and if suitably selected will make it possible to conduct an operation under nitrous oxide and oxygen when this would otherwise be impossible. It will reduce considerably the amount of ether required in deep anaesthesia for upper abdominal operations. It is necessary, however, to exercise judgement in the selection of cases and in the amount of sedation employed. The action of the drugs used is long and cannot well be reversed once they have been administered. The disadvantages can be summarized as follows:

1. The possibility of the airway becoming obstructed as the jaw relaxes, a condition made less obvious by the quiet respiration, necessitates skilled watching after administration.

2. The depth of narcosis, at first satisfactory, may, if shock develops, become dangerously deep.

3. In such cases insufficient aeration may be present afterwards from respiratory depression, although this may have been controlled during the operation. This, too, makes skilled nursing necessary.

4. Such a period of reduced pulmonary ventilation will tend to increase the risk of respiratory complications, while a prolonged absence of the cough reflex may have the same risk.

5. The possibility of derangement of liver function by barbiturates, and possibly by avertin, in cases of hepatic insufficiency.

Unless he has some experience in pre-operative medication the anaesthetist would do well to keep within the recognized scale of doses—or below, when age, weight, or feebleness suggest caution. In any event sedation should not be pushed to the stage of full anaesthesia (evipan and pentothal are not now being considered), but this should be completed by some inhalational method more under minute-to-minute control. Some obstetricians consider it unwise to give anything but atropine before Caesarean section because of the depressing action on the foetal respiratory centre.

Atropine

The most commonly used drug is atropine. It decreases the secretion of mucus and paralyses the vagus, thus diminishing one of the dangers of chloroform. It has no sedative action. For patients over the age of 2 years the dose is grain 1/100. Below this age it should be prescribed as follows: up to 6 months grain 1/300; 6 to 12 months grain 1/200; 1 to 2 years grain 1/150. Atropine should be given in all cases except in operations of only a few minutes' duration and in those in which hyoscine is being used (hyoscine has a similar action to atropine in reducing secretion). Hyoscine is better substituted for atropine in cases of hyperthyroidism in view of the metabolic stimulation of atropine.

Morphine and Hyoscine

Pre-operative sedatives fall into two categories: those producing drowsiness and amnesia, and those producing unconsciousness. The first category is represented by morphine and hyoscine, which together form an extremely good combination. The standard dose for adults is: morphine grain 1/6 to 1/4; hyoscine grain 1/150. In some cases the patients will be asleep when the anaesthetic is started, but short of this there will be drowsiness and absence of anxiety and afterwards a partial or complete amnesia. Omnopon gives rather better results than morphine: the usual dose—grain 1/3—is the equivalent of rather more than 1/6 grain of morphine.

There are few contraindications but some drawbacks. In view of the respiratory depression—not great, however, and usually more noticeable during the anaesthetic than before—pure chloroform should not be used and avertin is better avoided. For the same reason open ether is sometimes more difficult to give. The shallow breathing and tendency to apnoea make it difficult for a sufficient quantity of anaesthetic to be introduced. The signs of anaesthesia are less obvious and the anaesthetist may be misled by a condition similar to chloroform sleep. But with experience this can be overcome. Carbon dioxide is a valuable help. These objections apply to all pre-operative sedation and make the use of some form of closed anaesthesia with its greater control of respiration desirable.

Morphine and hyoscine are safe, and will be found the most suitable agents for routine use before general and spinal anaesthesia. The doses recommended here are as a rule sufficient, but may be exceeded in suitable cases. The injection should be given one hour before the operation and preferably with the patient on the stretcher or trolley. The room should be darkened and kept quiet, as with all forms of sedation. The action of morphine and hyoscine may be supplemented by an intravenous injection of one of the short-acting barbiturates—evipan or pentothal—which should be given immediately before induction of the inhalational anaesthetic and should be pushed to the stage of profound sleepiness just short of surgical anaesthesia. When either of these two drugs is to be used as the main anaesthetic a similar injection of morphine and hyoscine will be found to improve the anaesthesia and reduce the dosage.

Basal Hypnosis

Paraldehyde is the safest basal hypnotic. In normal doses it does not depress respiration and the cough reflex is not abolished. Since it is excreted in the breath it has no effect on liver or kidneys. Its smell is noticed least by the patient. It is administered in ten times its bulk of saline as a rectal injection with the patient on the left side. The standard dose is 1 drachm per stone of body weight and should be given one hour before operation. Young children, the elderly, and the sick, should receive about 20 per cent. less. Results are good but conscious-

ness is not always lost, although there will be no recollection of this.

Avertin is the most reliable in its hypnotic action. Its dosage (0.1 gramme per kilogramme of body weight) and method of preparation can be obtained from a table supplied by the makers and should be adhered to. Obese and elderly patients require a smaller dose—say three-quarters—while the maximum should be 8 grammes. In cases of doubt it is best to run in three-quarters of the selected dose and after a quarter of an hour to use the remainder if consciousness has not been lost. It should be given half an hour before operation and the patient be kept on the side until the anaesthetic is started. This will minimize the risk of obstruction as the jaw relaxes.

THE SHANGHAI BOMBARDMENTS

Any scepticism that may have been felt regarding newspaper reports on the effects of Japanese bombing of densely populated Chinese cities is dispersed by first-hand accounts of the experiences of resident British doctors which are now reaching England. The plight of the unfortunate Chinese civilians and the immense difficulties of providing adequate medical aid for the stricken and homeless are now more fully realized in this country and on the Continent. The League of Nations has voted a sum of £250,000 for medical services in China. Following an appeal by the Archbishop of Canterbury and other leading men a national fund has been opened for the relief of distress under the auspices of the China Association, the British Red Cross Society, and the Conference of British Missionary Societies. Meanwhile, pending the arrival of reinforcements of medical personnel and supplies, the energies and resources of doctors and hospitals in Shanghai, Canton, and other Chinese cities are sorely strained.

Care of Wounded Civilians

In the Shanghai bombardments the task of dealing with the wounded civilians fell largely to the Lester Chinese Hospital. This institution, founded in 1844, is staffed by missionary doctors and nurses appointed by the London Missionary Society and also by Chinese members of both professions. There are normally 230 beds, and 4,000 in-patients are treated annually, while the number of new out-patients reaches 62,000. Since other hospitals had to be evacuated for military reasons, while the emergency and Red Cross hospitals were entirely reserved for the soldiery, the influx of wounded civilians into the Lester Hospital was particularly heavy. Some measure of relief was afforded by the conversion to a temporary hospital of the Lester Institute, normally devoted to laboratory work and research. In addition to the great number of direct victims of the bombardments, many of whom suffered from severe cranial or abdominal wounds, other unfortunates were brought to hospital, especially Koreans, who, suspected of being Japanese spies, had been severely handled by the crowd. The appalling effects of modern explosives in densely populated areas are evidenced by the statement that the bursting of one single shell resulted in the death of two hundred people.

Among casualties brought to the Lester Hospital was a man whose body, completely severed across the middle, was still held together by his almost uninjured clothes. In another case a Chinese mother was blown to pieces, while the twin babies in her arms escaped with a few scratches. Less tragic, but grimly humorous, was the case of a woman whose leg had to be amputated. On regaining consciousness she burst into tears, bemoaning the loss of thirty dollars which had been hidden in the stocking of the severed limb.

Apart from the great influx of major surgical cases, many other factors increased the difficulties of the hospital. The staff was depleted by the holiday season. As a precaution against fires the gas supply had to be cut off. The general disorganization consequent upon the bombardment made it difficult to obtain food and other supplies, while a plague of flies from the corpse-littered destroyed areas caused a heavy incidence of dysentery.

These accounts of the troubles encountered in Shanghai in dealing with civilian victims of artillery, and especially aerial, bombardments give a painful foretaste of the conditions which may be expected in our own cities in the event of another European conflagration. Similar problems will have to be met, and it is important that measures for dealing with the civilian victims of aerial warfare should be perfected, as far as possible, in peace time. This point has been stressed in our correspondence columns.

In the issue of October 2 we printed a letter received by the Secretary of the British Medical Association from Dr. R. C. Robertson of the Lester Institute, Shanghai. The letter quoted a cablegram from the British doctors of that city appealing to the B.M.A. to exert its influence to prevent the carnage caused by bombing.

CONGRESS FOR EXPERIMENTAL CYTOLOGY ZURICH, AUGUST, 1938

According to the decisions taken at the fourth Congress in Copenhagen, the fifth International Congress for Experimental Cytology will be held in Zurich, Switzerland, during the week August 7 to 12, 1938. The sixteenth International Physiological Congress and the International Veterinarian Congress will be held in Zurich too, on August 14 to 18 and August 21 to 25 respectively.

The proceedings of the Cytological Congress are not to be divided in sections, but will be organized in the following way: scientific sessions will take up seven half-days; two afternoons are reserved for demonstrations, and during one afternoon there will be an excursion. Special subjects are to be treated at each session, opening with a general review, to which one or two supplementary reviews may be added. Reprints of these papers will be sent to the members of the Congress at their home address, or—if very late—will be handed over to the members at the opening sessions. Copies of the individual papers are likewise to be distributed before the sessions, the main object of the Congress being the *discussion* of cytological topics of special interest.

In agreement with the International Committee the Local Committee has chosen the following subjects for review: epithelium in culture and in the organism; structure of chromosomes; mechanism of mitosis; cancer cells and normal cells; experimental research on cytology and viruses; ultrastructure of the protoplasm and its products; chemistry of the cell. These reviews are calculated to cover the seven scientific sessions in the order indicated above. The names of the reviewers will be published in the second preliminary programme. The individual papers must be registered at the Congress Bureau before April 15, accompanied by a summary not to exceed half a page in the *Archiv f. exp. Zellforschg.* (the address of the Congress Bureau is, Prof. W. von Möllendorf, 9, Plattenstrasse, Zurich). The Local Committee will decide in each case whether it is possible to accept papers entered later than April 15.

Further information about the Congress may be had through Professor W. von Möllendorf or the honorary secretary for the Society, Harald Okkels, M.D., Institute for Pathological Anatomy, University of Copenhagen, Denmark.

The Board of Control (Metropole Buildings, Northumberland Avenue, W.C.2) has issued a revised list of medical practitioners in England and Wales who have been approved by the Board for the purpose of making recommendations under Sections 1 (3) and 5 (3) of the Mental Treatment Act, 1930. The names are given first in alphabetical order with full addresses, and are then regrouped geographically.

OPENING OF THE NEW SESSION

LONDON SCHOOL OF MEDICINE FOR WOMEN

MR. EASON'S INAUGURAL ADDRESS

The inaugural address to students of the London (Royal Free Hospital) School of Medicine for Women was given on October 1 by Mr. H. L. Eason, M.S., F.R.C.S., Principal and late Vice-Chancellor of the University of London, with Miss Elizabeth Bolton, the dean, in the chair. Mr. Eason urged his hearers to keep ever before their minds an ideal of conduct and a lively care for the integrity of their professional life. Medicine, though an honourable and trusted profession, held out many temptations and few privileges.

Citadels and Temptations

"In medicine, as in all other professions, there is a small minority with no principles who by their actions bring discredit on their profession out of all proportion to their number and lead the public to think that they represent the common code of honour among us. In a recent novel such a group of happily fictitious practitioners in the West End have been pilloried, and what has been written about them in a portion of that novel has overshadowed in the public notice the finer side of the profession which is displayed in the greater part of the book. I personally think the medical profession and the public owe a debt of gratitude to the author of that novel for having disclosed to the public how the science and art of medicine may be and is on occasion prostituted for gain.

"I have always felt that if the question of payment could be left out of our practice we should all be in a happier and more independent position. Throughout my professional career I have been more at ease in my hospital out-patient department, where money payments do not come into the picture, than I have been in private practice. It is quite true that the labourer is worthy of his hire, and surely the man or woman who by skill and care saves life or relieves suffering is entitled to the reward of his skill. But to those doctors whose moral fibre is not of the strongest the temptation to make money sometimes warps their conscience. To get rich quickly and to make easy money out of the fear and apprehension of your patients is the most insidious temptation that you will have to meet. To keep the narrow path between undercharging and undercutting on the one hand and, on the other hand, bleeding by excessive fees those who are in terror of pain is no easy matter."

Specialism, General Practice, and Quackery

Another problem in medicine was specialization, which had its advantages from the point of view of expert technique and special experience, but had its dangers in the shape of narrowed outlook. Unless the specialist kept his mind well open to the broader aspects of medicine and surgery he would inevitably tend to look at all disease from the point of view of his own specialty. The good general practitioner had the widest outlook and the least prejudice. Seeing his patients year in, year out, their father confessor in many matters other than those purely professional, he realized that he was dealing with human beings and not merely with cases. He saw disease in its earliest stages, and he also saw the progress of his patients through the hands of specialists and consultants and could, better than anyone, keep an unbiased outlook on the false claims and true, between successful and unsuccessful treatment, and between professional honesty and dishonesty. The patient who had an honest general practitioner and who trusted him was the most fortunate of all and was the best served.

In a reference to quacks Mr. Eason said that the public had always a great belief in the unqualified practitioner, and in medicine, as in sport, preferred the amateur to the professional. He was free to advertise, and his failures seldom came to light. He got his living from two classes of society. The idle and ignorant rich frequented the osteopath, the chiropractor, and other miracle-mongers, and the ignorant poor patronized the herbalist. In between them the solid business and professional classes trusted their doctor as they trusted their lawyer, their stockbroker, and their other professional advisers.

"It is true that from time to time unqualified persons evolve methods of treatment that are subsequently taken up by the medical profession, but these unofficial discoveries are not peculiar to the profession of medicine. The amateur has often made discoveries in other branches of science and knowledge, discoveries not foreseen by the trained scientist, but this is not necessarily derogatory to the profession. I would advise you, however, that throughout your career you should keep your eyes and ears and especially your mind open to any new trend of thought or method of treatment, however unorthodox its source. Try it out fairly and if, after due inquiry, you find it sound, make use of it."

MIDDLESEX HOSPITAL ANNUAL REUNION

A company of more than three hundred past and present members of the Middlesex Hospital Medical School met at the Savoy Hotel on Friday, October 1, the occasion of the annual reunion dinner. Dr. Douglas McAlpine, neurologist to the hospital, presided over a very happy gathering. Mr. E. W. Meyerstein, a generous supporter of the hospital and the medical school, whose gifts have totalled many thousands of pounds, was unable, owing to doctor's orders, to attend. He however sent a cheerful telegram, and two of his most recent gifts were gratefully acknowledged during the evening.

In proposing "The Middlesex Hospital and Medical School," the Chairman mentioned the loss sustained by the hospital during the past year through the death of Sir John Bland-Sutton, to whom he paid a special tribute. Future generations of Middlesex men would think of Bland-Sutton not only as the donor of the Institute of Pathology but as the man who had set a standard of achievement which would be an inspiration for all time. Time was responsible for the retirement during the past year of Dr. R. A. Young, for thirty-five years a member of the staff and one who had risen to high office in the College of Physicians; also Mr. W. Sampson Handley, who had acquired an international reputation in respect to the treatment of cancer and had helped to place the hospital in the forefront of the campaign against that disease. Discussing the hospital's progress the Chairman said that the new radiotherapeutic department, although not officially opened, was already receiving patients. It was, he thought, the finest department of its kind in the country. It had been made possible by yet another magnificent gift from Mr. Meyerstein. The treatment of cancer in that department would bring relief to hundreds of sufferers and even cure some. The new hospital was now complete, although over 100 beds remained unopened, and there was urgent need for fresh additions to the school buildings.

The toast was responded to by Mr. Richard C. Davis (Chairman of the Medical School Finance Committee), Dr. H. E. A. Boldero (Dean of the Medical School), and Mr. E. M. Japha (senior Broderip Scholar). Mr. Davis was able to report that the income of the school was satisfactory, and took the opportunity to express gratitude to the Medical Research Council and the British Empire

Cancer Campaign for their continued generous support of the school's research work. Last year the Medical Research Council, in addition to the material support and facilities it afforded, had given the school four full-time research workers in the Courtauld Institute. Reference was made by Dr. Boldero to the new Rudyard Kipling Fund to assist students or recently qualified men who might otherwise have to abandon their careers; and to the latest gift of Mr. Meyerstein, an athletic ground at Chislehurst costing £14,000 and covering 18½ acres. For the first time the school possessed a ground entirely its own. Inasmuch as the rebuilding of the hospital was complete, those responsible for the school considered themselves at liberty to mention their own needs. The Bland-Sutton Institute of Pathology and the Courtauld Institute of Biochemistry provided excellent and up-to-date facilities for final-year students. But the fundamental subjects—those of the first and second M.B.—must be improved, and with that object a complete scheme had been evolved of which the Board had approved and to which the University of London, sympathizing with the need, had contributed. That scheme envisaged rebuilding in three stages. The toast to the guests was proposed by Mr. Eric Pearce Gould and responded to by Surgeon Vice-Admiral P. T. Nicholls, Medical Director-General R.N. Finally, a toast to the Chairman was proposed by Dr. D. Evan Bedford, who acknowledged the enthusiasm and encouragement of Dr. McAlpine in connexion with the neurological work now bearing fruit in the hospital. For reasons of age Professor T. Yeates is to retire in the near future, and this fact gave rise to the many tributes paid to him during the course of the evening.

WESTMINSTER HOSPITAL DINNER

The annual dinner of the old students of the Westminster Hospital Medical School was held at the Park Lane Hotel on Saturday, October 2. In proposing the toast of "The Westminster Hospital and Medical School," the chairman, Mr. A. F. MacCallan, referred to the new hospital and medical school which are at present being erected on adjoining sites in Horseferry Road. The new school buildings would be ready for occupation, he said, in January of next year, and the new hospital, which would have 350 teaching beds, a year later. In the new school special provision had been made for the entertainment as well as for the teaching of students. He concluded by congratulating Dr. Arnold Stott upon his appointment this year as Physician to His Majesty's Household. Major-General J. W. L. Scott, in replying to the toast which the chairman had proposed, said that, though the material conditions in which the work of the Westminster Hospital was carried on were going to be changed, the spirit of the institution was unchangeable. He believed that this indefinable spirit could justly be regarded as the result of a constant and happy communion between the staff and students of the hospital. Mr. J. H. B. Round, the secretary of the Students' Clubs' Union, also replied, and gave some account of student activities during the past year. The toast of "The Visitors" was then proposed by Dr. Adolphe Abrahams, the Dean of the Medical School. In an amusing speech Dr. Abrahams welcomed particularly Sir John Parsons, the President of the Royal Society of Medicine, Mr. L. H. Savin of King's College Hospital, and the Rev. the Master of Charterhouse, who had twice been Mayor of Westminster. On behalf of the many distinguished guests the Master of Charterhouse then replied to this toast, and told some anecdotes about his many medical ancestors. "The Chairman" was proposed by Dr. Arnold Stott, who made witty reference to the many distinctions which had fallen to the lot of Mr. MacCallan after his twenty years of ophthalmic work in Egypt. To this toast the chairman responded briefly, and at the same time conveyed the thanks of a large gathering to the secretaries of the dinner.

UNIVERSITY COLLEGE HOSPITAL

The opening of the winter session 1937–8 at University College Hospital Medical School was marked by a reception given by the Dean and members of committee in the library on the afternoon of Tuesday, October 5. All the hospital, school, hostel buildings, and paying patients' wing were open for inspection.

The following special demonstrations were on view: In the bacteriological theatre, on the second floor of the Medical School, the Curator of the Museum had selected a number of specimens and set out some microscopical slides, and the director of the Radiological Department had arranged a demonstration in the new *x*-ray department. Dr. Nina Kellgren showed a new cinematograph film on "The Physical Development of Children and Corrective Exercises for Postural Abnormalities" in No. 1 Lecture Theatre. The film illustrates postural abnormalities in young children ranging from 3 months to 8 years, and how most of them can be remedied in the home by corrective exercises. Dr. Nina Kellgren, who has spent over two years of intensive work on its production, shows by comparison with a normal healthy child the abnormalities which occur at varying ages. One of the most difficult ages is at 5 years; actually over one hundred children of that age were examined to find a normal child suitable for the purpose of the film. The primary object of the film is the education of students, but its value to mothers throughout the country, if funds were available for its distribution, would be enormous, in that the first part educates mothers what to look for in children, and the second part illustrates the corrective exercises for abnormalities depicted in the first part.

ST. BARTHOLOMEW'S HOSPITAL

OLD STUDENTS' DINNER

The St. Bartholomew's Hospital Old Students' Dinner was held on October 1 in the College Hall, Charterhouse Square, Dr. C. M. Hinds Howell, who recently retired from the position of senior physician to the hospital, being in the chair.

In the unavoidable absence of Mr. Justice Luxmore, Mr. G. E. H. Palmer, Member of Parliament for Winchester and nephew of the chairman, filled the gap at the last moment and ably proposed the toast "The Medical College of St. Bartholomew's Hospital." He said that the difference between doctors and politicians was that doctors got credit for curing disease and abolishing evils, while the politician was blamed for causing all the evils in the world. They had, however, many difficulties in common, such as dealing with people who thought there was something wrong with them when in fact they were quite all right, and with people who thought they were quite all right when they were quite all wrong. Referring to the history of recent times, Mr. Palmer asked why it was that man behaved as he did. The politician was unable to supply an answer, but perhaps the medical profession could. It was, he considered, an important question, and he hoped that everyone would turn to science, biology, and medicine in order to find a solution to the problem.

In response, Dr. Hinds Howell, in the manner which has endeared him to generations of Bart's students, gave an account of the activities of the hospital and the college during the past year. The Duke of Gloucester, he said, had consented to take office as president of the hospital, and he reminded them that the Duke of Windsor, as Prince of Wales, had attended the first dinner to be held in the college hall two years ago. This year Queen Mary had opened the new medical block, which had been in active occupation for the past two months. The hospital

had acquired, through the generosity of Mrs. Meyer Sassoon, a high-voltage *x*-ray apparatus whose maximum output was a million volts. There had been certain changes in the governing body. Lord Stanmore had resigned from the office of treasurer, which he had held for sixteen years. During the last few days the clerk to the governors, Mr. Thomas Hayes, who had served the hospital for thirty-two years, had retired: he had endeared himself to all by his personality and had maintained cordial relations between the medical staff and the governing body. From the staff, Mr. R. C. Elmslie had retired at the beginning of the year, and Professor H. H. Woollard had gone to University College. They had to congratulate Mr. Girling Ball on being appointed dean of the Faculty of Medicine in the University of London, which had recently increased its annual grant to the school by £3,000. Congratulations were also due to Dr. Robb-Smith on his appointment as assistant director of pathology at Oxford, and to Mr. W. E. Underwood on winning the Jacksonian Prize for 1936 and on being appointed subdean of the College. Dr. Hinds Howell also referred to the loss St. Bartholomew's had sustained in the deaths of Mr. T. Just and Professor E. H. Kettle. Work was, he continued, now in full swing in the new building, but he would like to remind them that they still owed the Merchant Taylors Company something like £60,000. Much yet remained to be done for the *x*-ray department, and Bart's was still without a private patients' block. They were in need of a residential college, at a cost of £50,000. They urgently required money for research. Altogether at least £250,000 was necessary to put the hospital on a sound footing, and he hoped that benefactors would help them to solve this financial problem.

The health of the guests was proposed by Mr. REGINALD VICK and responded to by Mr. GEORGE AYLWEN, and a pleasant evening was drawn to a close by Mr. R. FOSTER MOORE, who proposed a toast to the Chairman, which was received with acclamation.

ST. MARY'S HOSPITAL

Past and present students of St. Mary's Hospital Medical School met to dine at Claridge's on October 2. Mr. V. ZACHARY COPE, surgeon to the hospital, presided.

Dr. M. W. LLOYD OWEN, in proposing the toast to "St. Mary's Hospital Medical School," said that he had the highest admiration for the way in which Dr. C. M. Wilson, whose name he coupled with the toast, had devoted his life to the welfare of the medical school. Outward and visible signs of Dr. Wilson's achievements were to be seen in the medical school building itself, and more recently in the magnificent ground at Teddington, which had been used that afternoon for the first game of the rugby football side. Generally in the sphere of athletics the school had held its own. The hospital itself had recently made distinct progress. Evidence of this was to be seen in the new nurses' home and the pay-block. The Lewis Carroll ward for children, consequent on a magnificent gift by Mr. Harben, was rapidly nearing completion. It would contain twenty-two ordinary cots, and the very important provision of four observation cots, which would prove a godsend to the harried house-physician in dealing with the difficult problem of the child in casualty with pyrexia. They were all now looking forward to November 10, when the Queen was to pay the hospital a visit and open the pay-block. Dr. Lloyd Owen also paid tribute to the generosity of Mr. Meyerstein in providing a research dental laboratory, and, concluding on the note on which he had begun, said as long as the hospital had a man of such character and foresight as the dean at the helm to guide its endeavours there need be no fear as to the future.

Dr. WILSON, in his reply, said that the pleasure he enjoyed as dean was not so much as a result of any success of policy, but rather as a result of the careers of those whom he had been mainly responsible in bringing to the medical school. It was interesting to find now some justification for the games policy inaugurated in 1920 in the interests of the boys who, after leading healthy outdoor lives, had been dumped down in a great city. It was difficult to explain the vehement opposition that had been stirred up in the breasts of some of the other schools. They at St. Mary's had been accused for years of taking too much exercise, but now in the physical fitness campaign the whole nation was being told that it did not take enough, and elderly gentlemen who had given up their lives to the acquisition of wealth were busy in the Press and on the platform explaining to the proletariat how really essential exercise was to a sound healthy life and sane outlook.

Responding to the toast of his health, Mr. ZACHARY COPE said there was a great sentiment of loyalty to St. Mary's, but they would need that spirit of "sticking together" more than ever in the future. They were at the moment on the crest of a very big wave; in every department there was progress, and excellent and amicable relations existed between the School and the Board under the chairmanship of Colonel Verey, who, with his fellow members, was most helpful in every way. Paying tribute also to Colonel Parkes, the house governor, and to the dean of the school, Mr. Cope said that with such people at its head St. Mary's would continue to prosper, but, unless there was maintenance of the sentiment which had animated those concerned in the past, the future would hold many problems. The State was going to take an increasing part in all their doings. It was necessary, in order to be able to withstand the attacks not only on hospitals but on medical schools, that there should be a feeling of loyalty throughout every institution. He believed St. Mary's would weather the storm, standing as one united hospital four-square to all attacks.

NATIONAL HEALTH CAMPAIGN

INAUGURATION BY THE PRIME MINISTER

The Prime Minister, Mr. Neville Chamberlain, inaugurated the national health campaign at a reception held by the Central Council for Health Education at the London School of Hygiene and Tropical Medicine on the night of Thursday, September 30. Sir Kingsley Wood, the Minister of Health, presided at the meeting, and Mr. Arthur Greenwood, Lord Horder, M.D., Sir Percy Harris, and Mr. H. J. Scrymgeour Wedderburn, Under-Secretary of State for Scotland, also spoke in support of the campaign. Those on the platform included Lord Stanhope, President of the Board of Education, Lord Addison, M.D., Dr. James Fenton, Chairman of the Central Council, Lord De La Warr, Lord Kennet, and Lord Aberdare. The Prime Minister was received by the Mayor of Holborn, the Dean of the School (Professor W. W. Jameson, M.D.), and Dr. Fenton. Lord mayors, mayors, chairmen of county councils, chairmen of district councils, representatives of the medical profession, and others interested in the work of the health services were present at the reception.

MR. CHAMBERLAIN'S ADDRESS

In the course of his speech, which was broadcast from the library on the National wave-length, the Prime Minister said:

To understand what moves us to this effort we must think not of the national health as an impersonal abstract thing, but of the people who compose the nation; the fathers and mothers who carry the responsibility of bringing up a family, but to whom, unless they have health,

that responsibility may become an intolerable burden; the young people who are just starting in life and to whom bad or good health means weariness and pain or that sense of power which is in itself an active enjoyment; and the small children who are at that critical stage when neglect of some simple precaution or some mistake in diet may handicap them all the rest of their lives.

Existing Health Services

We are fortunate in this country in that all parties in the State have in the past used their opportunities to develop a range of services and facilities for improving the health of the people which has not been surpassed by any country in the world. What we have not yet succeeded in doing is to ensure that those services are used to the full.

Local authorities know well the difficulty of persuading people to take full advantage of their health services. They have made great and praiseworthy efforts to spread the knowledge of what they are doing, and they have been backed up by numerous voluntary bodies with all that enthusiasm which is so characteristic of voluntary service. But we believe that something more is called for at this time; something in the nature of a national campaign with all the publicity that can only be achieved by a concerted and organized attack by Government, local authorities, voluntary organizations, doctors, teachers, and Press all working together for the same end.

The Sanitary Cordon

Our health services are of two kinds: those which come to the individual without any effort on his part, and those which require his active personal co-operation.

In the first category come such services as drainage, refuse disposal, street cleansing, and the provision of a pure water supply. It is to these services that we owe our relative immunity from dangerous diseases that formerly used from time to time to sweep the country. In 1866, for instance, there was an epidemic of cholera: 14,000 people died of it in England, and in the squalid streets of the poorer parts of London the mortality was frightful. To-day, thanks to the improvement in these health services, cholera is unknown, though the individual takes no special precautions to protect himself and thinks no more of the quality of the water he drinks than of the air he breathes.

Personal Health Services

But there is another and more personal kind of health service, which involves the necessity on the part of the individual man or woman to "do something" in order to take advantage of it. In this category of personal service I give naturally a foremost place to that old-established and trusted institution, the family doctor. A cardinal rule of health is, "Ask your doctor," and, above all, "Ask him in time." Nor must I forget the great voluntary hospitals, with their relatively new allies, the municipal hospitals.

Of this kind are our ante-natal clinics and infant welfare centres, our tuberculosis dispensaries and our facilities for the treatment of venereal diseases, our school medical and dental services, and our milk-in-schools scheme. Some of these services have been in operation a long time, others are of a more recent date, and we are still adding every year to the weapons we use against ill-health. Under the stimulus of the Local Government Act of 1929 there has been a great extension of public general hospitals based on wider areas and separated from association with the Poor Law. Even within the past few months we have had the Midwives Act of 1936, under which local authorities are making arrangements for properly qualified midwives on a whole-time salary basis to be available for attendance, either as midwives or as maternity nurses, on women in their own homes. These new developments will make their influence felt increasingly as time goes on, but we have only to look at the vital statistics to see that already the most encouraging and indeed startling results have been achieved. In the last fifty years the standardized death rate has been brought down from 18.7 to 9.2 per thousand, the infant mortality rate from 138 to 59, and the mortality rate from tuberculosis from 2,450 to 657 per million. And the expectation of life of a newborn child to-day is nineteen years longer than it was when I was born.

Inertia and Procrastination

If we have achieved this success with services which only benefit a part of the population because the other part are not using them, may we not hope for still greater improvements if only we can overcome the inertia or the obstacles that keep them away. What are these obstacles? It may be that the mother is too shy to go to the ante-natal clinic. Maybe she does not realize that the child's teeth are decaying and poisoning his system. It may be that the person who has a tiresome cough is afraid to consult the doctor lest he or she should be told that they have been attacked by tuberculosis. It may be that the child does not like milk or that the mother thinks that because it is cheap it is also nasty. Whatever the cause, unfortunately we have plenty of evidence that in many places these health services are still not appreciated as they should be. Let me give one or two instances to illustrate what I have just said.

When I first began to take an active interest in public health tuberculosis was regarded as the most terrible and fatal of all the more familiar diseases. But thanks largely to the vigorous measures taken to control it, which have now been in operation for many years, the death rate from tuberculosis in 1936 was less than half what it was on the average of the first ten years of the century, and to-day we can say that tuberculosis is an eminently curable disease provided it is diagnosed and dealt with at an early stage. But although tuberculosis is now a compulsory notifiable disease we still find that a large number of cases are only brought to the notice of the M.O.H. in the later stages, when it is too late to effect a cure and, sometimes, even not until death has taken place. The patient may, for instance, have ignored early symptoms and put off a visit to the doctor till the disease has become well established.

Then again, the figures of children under 1 year who attend infant welfare centres vary enormously. In some areas the whole of the infant population attends, in others the attendance is as low as 10 per cent. Exactly the same variation is found among expectant mothers receiving ante-natal care.

Another striking instance of the disregard of health services is to be seen in the milk-in-schools scheme, under which children can buy a 1/3 pint bottle of milk for 1/2d.—that is, at half the ordinary retail price. School medical officers and teachers all over the country have testified to the good effects of the milk in improving the physique and the mental alertness of the children who take it regularly. And yet if we leave out the children who receive free milk in these schools less than half the remainder are buying milk at the reduced price.

A Campaign of Publicity

Now these illustrations, and I could give others to supplement them, show clearly how great a need there is for a concentrated and determined crusade against ignorance, carelessness, and indifference about health services. We have got to bring home to everyone what are the dangers of ill-health and how they may be avoided, and that whether it be for themselves or their children it is their duty not to neglect the services which are at their disposal.

It is, then, with this object that the Government and the Central Council for Health Education have determined to carry on during the next six months an intensive campaign of publicity and propaganda, in co-operation with

and mainly through the local authorities, who have responded to the idea of the campaign with the greatest enthusiasm. Each month is to be devoted to some special subjects so as to obtain the greatest amount of concentration. Thus October will be given to a general introduction, November and December to maternity and child welfare services, including ante-natal clinics, January to the school medical and dental services and to milk in schools, February to tuberculosis and venereal diseases. Up to this point we shall be dealing with services designed either to cure or, better still, to prevent disease. But in the last month of our campaign we shall come to the latest but not the least important of all our efforts to promote the national health, I mean our new plans for stimulating and encouraging physical development. Here we shall be dealing not only with school children but also with young people who have left school and are passing on to maturity. I am afraid that in this matter of physical development some other nations, and especially Scandinavians, have got ahead of us, but now that we have realized its importance I am confident that we shall not be long in making up for lost time and showing that we do not mean to be left behind. And so in March the National Advisory Council for Physical Training will take up the theme, describing the new facilities for physical exercise and recreation and demonstrating how it can contribute to the enjoyment of life and to greater efficiency of mind and body.

LORD HORDER'S SPEECH

Lord Horder discussed the doctor's part in the national campaign for a healthier Britain, and emphasized the importance of enlisting the aid of hospitals, provident associations, and every other health agency, in addition to the health services proper.

"There is no question of the willingness of the doctor to help. But when I think of how the doctor can help I am faced with a less easy task. The doctor, of course, can give lectures, demonstrations, answer questions at public meetings. He makes himself familiar with the health services, and does his best to see that his patients avail themselves of these services. But the best things he does are not these. The best things are the things that enter into his daily routine, whether he be what is called a general practitioner or a specialist. The doctor works at the periphery. Your health services—and I agree with the Prime Minister that they are the best in the world—operate in the centre. It is the doctor who makes contact with the human material for whose benefit the health services exist. It is the doctor who deals with the individual. As the Prime Minister has stressed, it is to the individual that this appeal must ultimately be made. That is, if you have decided, as thank God you have, to achieve national fitness without regimentation."

The Doctor a Vital Link

"At the periphery there are difficulties which the centre does not always experience. To get your benefits across, the doctor provides a link that is vital. He more than any one else knows if the machine really works, and where, if it does not, the trouble really lies. Too often the doctor finds the individual muted by worry. He finds him static in regard to his own interests in the matter of health; finds him bewildered, it may be, by the mass of official chits and sanctions; find him hostile at times. How wise you are, Mr. Prime Minister, to invoke the aid of the doctor. The doctor has this tremendous pull—he is the friend of the man, woman, and child you seek to help, and he has their entire confidence."

But the doctor was human and needed encouragement, continued Lord Horder. The fight was not only waged against disease and unfitness, but also against economics. He was thinking not only of the excellent army of medical officers of health, but of Drs. Smith, Mackintosh, Jones, the rank and file holding the field.

Need for a Wider Appeal

"If your call to the nation to better health is limited to a fuller use of the health services the response will fall short of your desire. You, Mr. Prime Minister, and your colleagues have, I know, some reason for concentrating on this aspect of the problem in the first instance, and I think you are right. I think it is right to deal with the things we have and to see that they are properly used before dealing with things which may be for the moment visionary. But you have promised us that you will enlarge this appeal not only in the direction of implementing the Act through which grants are being made towards physical training. There is this basic matter of food, by which I mean enough food and the right food. We doctors are deeply concerned and involved in this question."

Lord Horder said that he was glad that it was recognized that there were a large number of agencies other than the health services proper, which must be co-ordinated in the service of the campaign. The hospitals, both voluntary and municipal, the universities and research institutes, the public medical services, and the provident associations were the media through which the Prime Minister, with his leadership, could enable the doctor to pull his full weight. If he were to specify one medium more than another for ensuring an abundant return for the courageous efforts being made, he would choose that of closer co-operation and consultation between the local authorities and the doctors, who were face to face with the domiciliary and individual problems relating to health.

THE CAMPAIGN IN SCOTLAND

Mr. H. G. Scrymgeour-Wedderburn, M.P., Under-Secretary of State for Scotland, launched the Government's national health campaign in Scotland by a broadcast talk on October 1. He said that Scotland had some special problems. The people of Scotland were healthier now than at any time in their history, but although great progress had been made other nations had made even greater progress, for the Scottish death rate was higher than that of England and Wales and of several other countries, while the infant death rate last year was 82, as compared with 59 for England and Wales. There was far too much sickness among the people, and too small a proportion of men and women enjoyed the happiness that should come from perfect health. The first problem in Scotland was maternity and infant welfare. Next the problem of chronic sickness in the insured population was to be investigated by all the medical practitioners in the country. Education of the public in healthy living was to be pursued with the help of the family doctor, welfare centres, schools, and schemes for physical training and recreation. The health services in Scotland, built up by the efforts of the Government, the local authorities, and the medical profession, and costing many millions of pounds every year, had done great work, but they could do greater work still, and for this it was essential that the people should use those services to their fullest possible extent. The Empire Exhibition which would be opened in Glasgow next spring would provide a rallying point for the progress of this health campaign in Scotland, but if its results were to endure continuous patient effort was needed. Doctors could help in sickness and could advise what should be done to keep well. The organized community could provide decent social conditions and services, but health remained very largely a way of living, and in the end it was for the individual to lead the healthy life.

Dr. M. von Pfaundler, professor of children's diseases at Munich and conjoint editor with the late Professor Schlossmann of the well-known *System of Children's Diseases*, has retired from his chair and been made emeritus professor.

WORLD SURVEY ON NUTRITION

[FROM A CORRESPONDENT IN GENEVA]

Nutrition as a subject of international concern first took the stage at the League of Nations Assembly two years ago. At the Assembly now ending in Geneva it again held a position of prominence, delegates from more than half the countries in the League taking part in discussions which occupied three sessions. The whole question was raised originally at the instance of the Australian delegate Mr. Stanley Bruce, and both the committees concerned with it, one considering its economic and social aspects and the other its physiological aspects, had British chairmen—namely, Lord Astor and Sir Edward Mellanby.

British Empire

Lord Astor himself opened the discussion in the present Assembly by summarizing the final report of his Mixed Committee, so called because it represented consumers and producers, economists and agriculturists, and medical and social experts. He said that something like thirty national nutrition councils had now been set up. The representatives of a number of these had recently met in conference, and he had been particularly impressed by the value of the interchange of experience which had taken place regarding the technique of nutritional surveys in different countries and methods of nutritional education and propaganda.

The discussion was continued by Mr. R. H. Bernays, M.P., Parliamentary Under-Secretary to the Ministry of Health, who described the steps which Great Britain had taken to deal with malnutrition in colonial areas. Reports showed the Colonial Governments to be fully aware of the urgency of the problem. These reports contained accounts of surveys, schemes for distributing milk for school children, research work, propaganda campaigns, and courses in schools; they were at present being studied by a central committee presided over by Lord De La Warr. Mr. Bernays also mentioned the adaptation of agriculture to the requirements of improved nutrition. There had been a striking change in this direction, he said, in the agricultural output of the United Kingdom—a sharp decrease in the area under cereals and a rise in the number of dairy cows. Cereals at present represented only 5.3 per cent. of agricultural output, non-protective foods (excluding potatoes) only 11.4 per cent., protective foods (dairy produce, eggs, fruit, and vegetables) 45 per cent., and intermediate products (potatoes, meat, and poultry) some 40 per cent. Some account was also given by the Australian delegate of the movement there, where an Advisory Committee on nutrition had already presented three interim reports. In spite of the comparatively high level of nutrition in Australia there was much scope for further improvement, and in particular the consumption of milk was too low. The South African delegate said that in the Union attention was being concentrated on the nutrition of children. Rations of cheese and milk were given in all primary schools and to some children in secondary schools.

Nutrition in Europe

The speeches by the various delegates from European countries suggested that nutrition is not being lost sight of in military preparations. In Hungary, for example, the minimum and also the optimum dietary requirements of agricultural workers are being studied, as well as the problem of the adjustment of agricultural output to nutritional needs. The Austrian delegate called for the establishment of a uniform international classification by nutritive values of food destined for export, but Lord Astor said that the question of the classification and standardization of foodstuffs was already being studied by a technical committee appointed at the recent conference of representatives of national nutrition committees. The Polish delegate complained that the nutrition problem of the peasant had been neglected, to which Lord Astor replied that this was mainly due to the scarcity of information on the subject. Sweden called for a special international conference to investigate further means of stimulating the consumption of such important foods as milk and dairy produets. Denmark praised the moderate commercial policy of the United Kingdom in respect of tariffs, which had enabled the British people to enjoy food at less than half the prices paid by many other European communities. Finland described its progressive nutrition policy, including important measures for improving the nutrition of school children and young persons, studies of the diets of income and occupational groups, and investigations into agricultural productivity.

South America

The delegates of Central and South American States also contributed their experience. Venezuela had reduced taxes on foodstuffs, established health centres for children, encouraged diversity of crops, introduced price control, and distributed milk to the necessitous. Uruguay had set up a large committee on popular nutrition, with subcommittees in all the provinces, under the auspices of the Ministry of Public Health and Public Welfare, and an attempt was being made to provide fish foods and tropical fruits at economic prices, and to reduce transport and distribution costs. Chile had set up a national food council consisting of the Ministers of Agriculture, Health, and Labour, with various technical specialists. A subsistence commissariat had been established to ensure a supply of staple foods direct from producers to consumers at costs reduced by the elimination of middle men. Free midday meals were provided for all children in elementary schools, the production and distribution of milk was being centralized and organized as a social service, and working mothers received benefits equal to half wages during the whole period of lactation. Mexico spoke of a control established over the quality and price of protective foods, popular education in the principles of dietetics, courses in scientific nutrition in its medical schools, teachers' colleges and nurses' training homes, and publications on peasant nutrition and standard diets for workers.

Asia and the Far East

In Asia too the gospel of nutrition is being vigorously spread. The Indian delegate pointed out that the standards of nutrition employed in the League's inquiries had so far been based upon conditions in Europe and North America, and for the East different standards would be required. The Indian Government, he said, had conducted research into the vitamin standards and had recently published tables showing the nutritive value of many foodstuffs commonly available in India. Indian agricultural policy was being directed towards the increased production of milk. Even China, distracted land that it is, spoke of progress in this field. The majority of the population of China, said its delegate, were probably permanently undernourished. Their diet was mainly vegetarian and, as compared with that of Europeans, deficient in animal proteins, in vitamins A and D, and probably also in vitamin B. Last year the Chinese Government set up a national nutrition institute, in which were being studied such subjects as dietary standards in institutions and among industrial workers, the nutritional requirements of mothers and school children, and the training of public health officers, teachers, and nutrition experts to spread knowledge regarding sound nutrition. He promised that the results of these studies would be communicated to the League in due course.

The League has now completed its work on nutrition, but will continue to take a fatherly interest in the movements in the different countries. If all that was said in the discussion is to be taken at its full value the world will soon be flowing with milk and honey. The pity is that the flow should be menaced by tragic interruptions which Geneva seems powerless to prevent.

Local News

ENGLAND AND WALES

Tuberculosis in Wales—Committee of Inquiry

The Minister of Health has sent a letter to Lord Davies, as president of the King Edward VII Welsh National Memorial Association, announcing the appointment of a small committee of inquiry into the working of the arrangements for the prevention, treatment, and after-care of tuberculosis in Wales. The appointment of this committee was foreshadowed by Sir Kingsley Wood during his recent visit to South Wales. His letter states that Mr. E. Clement Davies, K.C., M.P., has agreed to act as chairman, and Dr. F. J. H. Coutts, C.B., as the other member. Dr. Coutts was for many years a senior medical officer of the Ministry, and has had long experience of the administrative and other problems connected with tuberculosis. The secretary of the committee will be Mr. D. J. Wildgoose, Ministry of Health, Whitehall, S.W.1. The terms of reference of the committee are:

To inquire into the working of the arrangements for the prevention, treatment, and after-care of tuberculosis by local authorities in Wales and Monmouth through the agency of the King Edward VII Welsh National Memorial Association and otherwise, and to advise whether any, and, if so, what, steps should be taken to improve these arrangements and, in particular, whether and in what respects the scheme made under Section 102 (3) of the Local Government Act, 1929, for the Third Grant Period should, having regard to the cost of public health services in Wales, be amended.

Tuberculosis in Manchester

The report for 1936 on the health of Manchester records that the notification and death rates for tuberculosis during the year constituted a low record figure. Although notifications of non-pulmonary forms of the disease show a very slight diminution, the main decline is in pulmonary cases. This decline has now been continuous for five years. The report stresses the importance of proper treatment at the earliest manifestation of the disease. Delay is especially noticeable in patients of the age group from 65 onwards. Thus in this group there exist a large number of active, chronic tuberculous individuals who constitute a potential source of infection to their families. Efforts are being made to secure the examination of contacts of such patients, especially the young adults. The report deplores the valuable time lost because patients frequently resort to nostrums advertised in the lay press before visiting a doctor. The clever pseudo-medical advertisements of these remedies are characterized as mischievous and dangerous. Although the year was somewhat unfavourable for other respiratory diseases, the death rate from pulmonary tuberculosis was only 0.87 per 1,000. The effect of fog on persons suffering from pulmonary tuberculosis was very definite; with the coming of the first fogs the deaths from this disease increased rapidly. For example, in the January and February fogs the deaths rose from an average of 14 during the preceding weeks to 15, 18, and 20 per week. Again, in two spells of fog in the autumn the figures of 16 and 24 deaths per week were reached. The average weekly death rate for the whole year was 13.

Health Aspects of Smoke Abatement

Coincident with the start of the campaign for improving the health of the British nation came the ninth annual conference of the National Smoke Abatement Society at Leeds last week. In his presidential address on October 2 Dr. H. A. Des Voeux urged the reiteration of the ancient Greek ideal of clean and open cities freed from slums on earth and polluted atmospheres. He recalled that coal was not used in England before 1239, and that conditions had grown worse with advancing industrialism and inadequate sewerage. Mr. J. E. Acfield indicated the importance of considering the location of high-power electricity generating stations when residential centres were being planned. He added that only three of thirty new buildings of any magnitude erected since April, 1930, in the central area of Leeds used raw coal as fuel, and this had been brought about without the corporation having had to exert any pressure. There were now in that city 4,200 new dwelling houses and cottage flats equipped with ranges specially designed for burning coke, and all buildings now being erected on housing estates were being so furnished. Ventilation problems in such cases had as yet not been entirely overcome, and gas fires presented difficulties in this respect as well as in regard to the cost of gas. Mr. Charles Gandy, chairman of the executive committee, pleaded for smokeless zones in towns as being a primary obligation of the town planner. Dr. R. Veitch Clark, medical officer of health for Manchester, thought that the existing legal powers were not being utilized enough. Only a statutory smoke board for a regional area could secure effective administration, and he called attention to the parallel in the case of joint river boards. Dr. Matthew Burn, deputy medical officer of health for Birmingham, discussed the work of statutory and advisory committees, pointing out that a great deal more could be done with the powers already available. Close and effective co-operation with manufacturers would be of great value in achieving the objective of a cleaner atmosphere. Councillor W. Asbury, chairman of the Sheffield, Rotherham, and District Smoke Abatement Committee, explained how research had rendered certain metallurgical processes nearly smokeless; low-temperature furnaces were only successful when using gaseous fuel and electricity, though progress had been made recently with the use of pulverized coal. Dr. W. M. Frazer, medical officer of health for Liverpool, mentioned the fear that smoke by-laws might discourage new industries, and stressed the value of intensified education in respect of smoke abatement and fuel economy. Successful classes were being conducted by the West Lancashire and Cheshire Regional Smoke Abatement Committee in collaboration with the Liverpool University School of Hygiene. He thought that the mass rate of emission of pollution from domestic smoke required more forcible action, and that the time had come to organize a national effort to promote smoke abatement. Dr. J. Johnstone Jervis, medical officer of health for Leeds, described what had been done in part of the West Riding as illustrating what could be achieved under the existing legislative powers; the greatest source of discomfort had been found to be the older and more obsolete coal-mining plants.

AUSTRALIA

A Febrile Disease in Queensland

The annual report (1936–7) of the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, contains observations on what appears to be a new disease. In the course of the last three years some thirty cases of febrile disease have been observed in Queensland. The fever does not conform to any of the usual clinical types, nor has investigation along orthodox bacteriological lines established its aetiology. The disease has been provisionally termed "Q. fever," while Queensland rickettsial fever is also suggested as a suitable name. The local investigator of the cases, Dr. E. H. Derrick, found that a mild febrile reaction occurred in guinea-pigs inoculated with blood taken from a patient at the height of his fever. This guinea-pig fever was indefinitely transmissible in the guinea-pig by blood or liver emulsion, but no pathological changes could be detected. After recovery the animals proved to be immune both to infective guinea-

pig liver and to infective blood from human patients. Further studies, prosecuted by the Institute, failed to demonstrate the presence of cultivable bacteria, leptospirae, rickettsiae, or protozoa in infective guinea-pig tissues. The agent was found to be filterable with difficulty through relatively permeable gradocol membranes. The reactions of other animals were then tested. The rhesus monkey reacted with a well-marked fever, and its blood during the febrile period was infective to guinea-pigs. In mice inoculated intraperitoneally, although the infection rarely proved fatal, marked enlargement of the spleen occurred, together with moderate enlargement and distinct histological changes in the liver. Rickettsial bodies were observed in sections and smears of enlarged spleens situated in the cytoplasm of cells in the splenic pulp, forming rather sharply outlined microcolonies of closely packed organisms.

Subsequent studies showed that the infective agent in mouse spleens was identical with that in guinea-pig liver. After many mouse-to-mouse passages enlarged spleens were sent frozen by air to Brisbane. These produced typical fever in normal guinea-pigs, but none in guinea-pigs immune to another strain of the infective agent, obtained initially from a different patient. Thus the available evidence tends to incriminate the rickettsiae as the actual infective agents. So heavy is the infection in mouse spleens that it has been possible to secure by differential centrifugation emulsions with large numbers of rickettsiae and very little tissue debris. Preliminary experiments indicate that these emulsions are specifically agglutinable by convalescent sera from guinea-pigs and a monkey, and by one of two convalescent sera from human cases of "Q. fever" at present available. It is suggested that this indication, if established by further studies, should furnish a valuable means for the epidemiological investigation of the human disease.

Correspondence

Spinal Anaesthesia for Caesarean Section

SIR,—In my book on *Caesarean Section* (1927) I stated that I had never employed spinal anaesthesia in cases of Caesarean section, on account of the increased risk to the mother which it entails. During the last ten years many cases have been published in which death or severe disabilities—meningitis, paralysis, severe headache, etc.—were due to this method of treatment. In the July number of the *Bulletin de la Société d'Obstétrique et de Gynécologie de Paris* (p. 588) two cases are described of low Caesarean section in young healthy women in which fatal syncope occurred within one to three minutes of the spinal injection. In the discussion of the cases it was stated that Professor Brindeau and Professor Brouha had had several fatalities, and that the latter had in consequence abandoned spinal anaesthesia in cases of Caesarean section. Professor Voron alluded to the special bulbar sensibility of women in labour to the action of cocaine compounds, and added: "Undoubtedly we ought to give up the employment of a mode of anaesthesia which otherwise possesses such incontestable advantages." De Lee (*Obstetrics*, 1933, p. 319) writes: "Krönig said spinal anaesthesia is dangerous in pregnancy and labour, and present experience with all the drugs sadly confirms this." Winter and Halban (*Lehrbuch der Operative Geburtshilfe*, 1934) also call attention to the danger of spinal anaesthesia in women who are pregnant or in labour: "for general practitioners the question of its use does not arise." For the foregoing reasons I was sorry to find, in Dr. H. K. Ashworth's important article on spinal anaesthesia (*Journal*, October 2, p. 671), Caesarean section given as an indication for that method of anaesthesia which the eminent obstetricians mentioned have concluded should be abandoned in favour of general or local anaesthesia for this operation.—I am, etc.,

London, W.1, Oct. 2. HERBERT R. SPENCER.

Pernicious Anaemia and Diabetes Mellitus

SIR,—The two cases of pernicious anaemia and diabetes mellitus described by Dr. H. G. McGregor (September 25, p. 617) are of interest since this combination is relatively uncommon.

In 1933 I reviewed my series of cases and suggested then that the combination was most possibly a coincidence. Since then I have observed in a series of nearly one thousand cases of pernicious anaemia thirteen definite examples of diabetes mellitus coexisting in the same individual, while two others are known to have had intermittent glycosuria for many years. Of the thirteen patients six were males, aged between 34 and 65 years, and seven were females, aged between 45 and 66 years. Pernicious anaemia was first diagnosed in six patients, two months, one and a half, three and a half, four, four and a half, and six years respectively before the diabetes mellitus; symptoms of diabetes mellitus were first noted in four patients, one, five, ten, and twenty-six years respectively before the pernicious anaemia; while in the remaining three the two conditions were diagnosed simultaneously.

The hereditary factor may be of some significance, since I have often noted not only the occurrence of pernicious anaemia or subacute combined degeneration of the spinal cord in different members of one family, but also families in which other members have had diabetes mellitus, microcytic anaemia, or simply achlorhydria (Wilkinson and Brockbank, *Quart. J. Med.*, 1931, **24**, 219). Achlorhydria appears to be the most frequent common factor in the two conditions, since it is almost invariable in pernicious anaemia, and Dr. T. H. Oliver and I found that it was present in a large percentage of diabetics—an observation that has been noted by others. Since the majority of cases of pernicious anaemia are first diagnosed between 40 and 60 years of age it will be interesting to follow up from this point of view the large number of diabetics now in that age period as a result of the highly successful modern diabetic treatment. Particular attention should be paid to those diabetics with achlorhydria and with diabetic neuritis.

The treatment of patients with pernicious anaemia and diabetes mellitus does not present any greater difficulties than may occur in the separate diseases. Each disease can be treated adequately in the appropriate manner without interference from the second treatment, and my experience is that less insulin may be needed while greater amounts of anti-anaemic substances are unnecessary. With increased—almost normal—expectation of life for patients with pernicious anaemia it is now necessary to remember that they may develop other diseases to which the normal individual is liable. Consequently, changes in the character or an apparent return of the symptoms when taking adequate treatment must be investigated carefully—thus, a sudden loss of weight may indicate diabetes mellitus, neoplasm, phthisis, thyrotoxicosis, etc., all of which have been noted, although not often, in my series during the last nine years.—I am, etc.,

Manchester, Sept. 30. JOHN F. WILKINSON.

Anæmia of Hepatic Cirrhosis

SIR,—I was interested in the annotation (*Journal*, September 25, p. 628) on the anaemia of hepatic cirrhosis, especially in the statement that "it seems unlikely that the part played by the liver is passive or that it acts merely as a storehouse for material elaborated in the intestinal tract." Some years ago I showed that an important sequela of iron deficiency in pigs was a macrocytic anaemia associated with great destruction of the central areas of the liver lobules. In extreme cases every lobule was affected and to the extent that the liver tissue remaining consisted of a single layer of liver cells at the periphery of the lobules. Recovery was possible, however, and there was the most dramatic rise in the percentage of haemoglobin and in the red cell count on the administration of even a single dose of liver extract. (Incidentally I suggested that such cases be employed for the purpose of standardizing liver extract.) I recognized at the time that such a result was presumptive evidence of the existence of a function by which the liver elaborated a "forerunner substance," produced in the intestinal canal by the interaction of the intrinsic and extrinsic factors, but that this point could only be finally settled by the administration of dried stomach tissue, when a negative result would be expected to follow on the present hypothesis. Unfortunately, for reasons which need not be gone into here, I have not had the opportunity of carrying this out, so that it must be left now to someone in more fortunate circumstances, or alternatively to those having at their disposal suitable cases of cirrhosis of the liver in human beings.

The annotation goes on to say that "the mechanism of pernicious anaemia is more complicated than was at first realized." I imagine that the unravelling of this complexity would be greatly facilitated by a recognition of the essential difference (and its implications) that exists between macrocytic and megalocytic anaemias. Absence of liver agent in cases in which the marrow is organically sound and healthy leads to a macrocytic anaemia, a condition from which the patient can recover: in pernicious anaemia, however, the bone marrow is organically diseased and functioning on an early primitive red blood cell formation basis—that is, a megalocytic one. The absence of liver agent in this case (brought about as a consequence of the disease—on this point see, for example, Castle and Minot's book on the anaemias, 1936) keeps the blood formation on this early basis with an inevitable fatal issue unless this substance is artificially administered when amelioration takes place, blood formation still, however, remaining primitive and never becoming definitive in type. The rationale of the views just expressed is fully discussed elsewhere (*Edin. med. J.*, 1935, **42**, 293), and space would not allow of its adequate treatment here.—I am, etc.,

Aberdeen, Sept. 25. J. P. MCGOWAN.

Giant-cell Tumours of Bone

SIR,—I sent Mr. Osborn's letter, with its criticism of surgery and ardent advocacy of *x*-ray therapy of giant-cell tumours, to Dr. T. Campbell Thompson of New York, asking for his comments. In order to be brief, I may say that his feeling is that the treatment by surgery is more reliable and causes less loss of function than treatment by *x* rays.

In his opinion "there has been something like 20 per cent. loss of function in the joints treated by surgery as compared with 50 per cent. or more in those treated by *x* rays. I saw one case of a hip-joint in which there was entire loss of cartilage and joint space as seen in the *x*-ray and almost complete loss of motion. I saw one case of a giant-cell tumour at the ankle-joint in which the *x*-ray treatment was sufficient to arrest the tumour but caused such severe skin changes that a chronic intractable oedema of the foot developed, which eventually required amputation. All of our men here who have seen cases treated by *x* rays feel the same way—that the dosage required for arrest of the tumour is almost sure to cause irreparable changes in the joint close to which the tumour almost invariably lies. The results from operation are quite uniformly good unless the operation is done carelessly and closure done poorly, or if infection results. . . .

"I think that Mr. Osborn's letter is very well written, but he apparently is not sufficiently cognizant of the poor results and the complications of *x*-ray treatment"

I feel that this letter is worth bringing before your readers.—I am, etc.,

Oxford, Oct. 2. G. R. GIRDLESTONE.

Endotracheal Anaesthesia

SIR,—Mr. Cecil Joll, in a letter published on October 2, disagrees with Dr. Ivor Lewis's article citing thyroid surgery as a contraindication to endotracheal anaesthesia. While the opinion of such an eminent thyroid surgeon must be regarded with the greatest respect, we would venture to suggest that it is not the view at present held by the majority of surgeons and anaesthetists in regard to operations for toxic goitre.

It so happens that one of us (C. L. H.) has statistics covering a series of 2,000 thyroid operations for toxic conditions only, of which more than 700 were performed by the other (G. L. K.). Half of this total were performed under endotracheal anaesthesia and the other half were not, so that we thought the results might be of sufficient general interest to mention briefly.

The first series covered the period from 1920 to 1928, and the anaesthetic technique employed was at first insufflation with air–ether and later endotracheal inhalation with nitrous oxide–oxygen and minimal ether. These methods were usually preceded by local infiltration with novocain.

The second series, which has just been completed, started in 1929 with the avertin–N_2O–O_2 technique. Most of these patients had, in addition, an infiltration with 0.5 per cent. novocain and 1/500,000 adrenaline, though about 200 had only adrenaline–saline solution. The comparative mortality figures are as follows:

	Endotracheal Anaesthesia	Avertin $+N_2O$–O_2
Immediate mortality	1 (0.1 %)	0
Remote mortality (up to seven days from operation) ..	28 (2.8 %)	13 (1.3 %)
Total mortality	29 (2.9 %)	13 (1.3 %)
Deaths due to respiratory complications	14	3

In one of the patients, who died from respiratory complications in the "avertin" series, a condition of advanced asbestosis was discovered *post mortem*, and if this one be excluded it will be seen that the respiratory mortality was seven times greater in the endotracheal than in the "avertin" series. We have no figures for non-fatal respiratory complications, but they are undoubtedly much lower in the second series. The same surgeons operated throughout, and the surgical technique has not altered appreciably during the relevant period.

If reasonable gentleness is employed by the surgeon both ether and endotracheal anaesthesia are quite unneces-

sary in the vast majority of operations for toxic goitre, and their routine use appears to us to add a needless hazard to the procedure. We recognize that they may be necessary for some patients with non-toxic obstructive goitres.—We are, etc.,

C. LANGTON HEWER.
GEOFFREY KEYNES.

London, Oct. 4.

SIR,—Although Professor R. E. Kelly and Mr. Cecil Joll are well satisfied with their results with endotracheal anaesthesia for thyroidectomy, that is not the experience of many competent authorities in England and abroad. Hewer's *Recent Advances in Anaesthesia*, and the text-books published by Ross and Fairlie, Nosworthy, and the Baker Institute, Melbourne, are unanimous in stating that an endotracheal tube is best avoided in thyroidectomy. These publications represent a very wide circle of opinion, and my own modest experience has led me to believe that it is true.

I congratulate Professor Kelly on being the first to introduce endotracheal anaesthesia into England, but I am surprised that he should be so prejudiced against modern inhalation methods which are now so universally accepted. Nothing could approach normal physiological conditions more nearly than the wide-bore Magill tube, which merely prolongs the trachea to the surface and eliminates the gateway of the glottis.

Professor Kelly permits himself to err when he refers to our machinery as cumbersome, and he seems to be uncertain as to the function of the bag in the circuit—which leads me to wonder what method he has devised for giving cyclopropane.—I am, etc.,

IVOR LEWIS.

London, W.1, Oct. 5.

Adult Serum in Measles

SIR,—I was interested in the paper by Sir Kaye Le Fleming in your issue of September 25 (p. 612), where he describes the treatment of an epidemic of measles in a public school by adult serum. Some of his remarks call for comment.

Ever since the days of Francis Home (1719–1813) workers have been attempting to prevent or modify measles, with varying success. Of recent years, however, it has been established that an attack of measles can be prevented or attenuated by the use of a suitable dose of convalescent measles serum or even adult serum. This has long passed the experimental stage, and is now recognized as the established procedure in measles control. Nicolle and Conseil (1918) showed that the serum of children convalescing from measles could confer protection on an exposed susceptible, and this advance was soon put on a definite basis by work both in America and in this country. As long ago as 1927 Dr. F. B. Smith and I published an article on the prophylaxis of measles with convalescent serum. Since then I have used both convalescent measles serum and adult serum on several occasions in school epidemics of measles, and can vouch for its efficacy in prevention, when this is desired, or attenuation in suitable cases. Among other publications I would like to call Sir Kaye Le Fleming's attention to papers by Burnet (1935) on the attenuation of measles by adult serum, Hobson (1934), and Elkington (1936), which deal specifically with the control of measles epidemics. Hence it is hardly accurate to claim that his is the first occasion on which adult serum treatment has been used in a public school.

It is interesting to note that there was no evidence of temporary immunity among susceptibles resulting from the use of adult serum. This is in marked contrast with what may be expected from the use of convalescent measles serum given before the sixth day from exposure. I am so impressed with the uniformly good results obtained by the use of convalescent measles serum that I always carry a stock, and each time I have had occasion to use it I have been increasingly impressed with its effectiveness in prevention or attenuation of the disease and avoidance of complications.

For some time now it has been my practice in school epidemics of measles to divide the susceptible children into two groups: those who are poor risks and who should be given serum at once, aiming at prevention, and those who are healthy and in whom attenuation rather than prevention is desired.—I am, etc.,

SINCLAIR MILLER.

Harrogate Clinic, Sept. 27.

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Indications for Induction of Abortion

SIR,—Mr. E. A. Butterworth's letter (*Journal*, September 25, p. 635) raises an important question. I feel, however, that he has been unfortunate in the choice of his second illustrative case. Within recent years the advisability of induction of abortion for tuberculosis has received considerable attention; the conclusions reached are admirably surveyed and summed up in F. J. Browne's *Ante-natal and Post-natal Care*. Who is to decide whether induced abortion is necessary in any particular patient? If it is the patient's doctor, the obstetrician becomes merely the tool for the purpose of the operation, and his wider prognostic experience is valueless. If the consultant's view opposes that of the practitioner, the latter may refer his patient to a further specialist for the confirmation of his opinion.

It is absurd to say that advice is given in accordance with rules. The consultant has to consider what treatment will best serve the interests of the patient, and the patient must be advised accordingly. I know of few obstetricians who hesitate to perform induction of abortion if it be warranted. On the other hand patients are constantly referred to obstetricians for the termination of pregnancy when the indications are slight or non-existent. No doubt in many of these cases there is some "domestic" indication, but in the absence of a definite, pathological condition—rendering the continuance of pregnancy more hazardous than the risk and difficulties attending abortion—the majority of obstetric specialists hesitate to advise the latter course. Until the indications are extended to include "unwanted pregnancies"—and I hope this may never come to pass—a great deal of unnecessary suffering, often mental, can be alleviated by the patient's doctor, who should be responsible for her instruction in contraception or should advocate voluntary sterilization in suitable cases.

Finally, I would point out that it is unjustifiable for a doctor to assure his patient, before her visit to the consultant, that abortion is to be induced. If the consultant does not concur in the view that termination of pregnancy is necessary the patient will be annoyed either with her doctor or with the specialist, according to her own desires concerning the pregnancy, and the reputation of either may suffer through the nimble tongue of a dis-

gruntled woman. Perhaps the best method of deciding whether artificial termination of pregnancy would benefit a patient's health when the practitioner and consultant disagree would be for the doctor to take the opinion of a second independent specialist and abide by a majority vote.—I am, etc.,

STANLEY W. WRIGHT., M.B., M.C.O.G.

Newcastle, Staffs, Sept. 29.

SIR,—I quite agree with Dr. F. M. R. Walshe's letter (*Journal*, October 2, p. 678) in which he states "we may be thankful that in this country it [the Law] will never hand over to us the power of life and death over our future fellow-citizens." I have expressed similar views elsewhere, but feel that two types of case need consideration—namely, cases of rape and of incest. Unpleasant as this subject is, it must be faced, since these cases are more commonly followed by pregnancy than is generally realized. Clearly in these cases it is against the interest of the State for pregnancy to continue, and, in my view, with legal safeguards induction of abortion should be allowed.—I am, etc.,

London, W.1, Oct. 3. JOHN H. HANNAN.

SIR,—Dr. F. M. R. Walshe is surely wrong in holding that the nation would fetter itself with the chains of a potential medical tyranny if it allowed doctors to accede to any woman's request to have her pregnancy interrupted. What is tyrannical is the present ruling that only seriously diseased women may legally have the operation. It is a tyranny which a rapidly increasing number of women are determined to abolish, and which is openly deplored even by some Conservative Members of Parliament.—I am, etc.,

London, S.W.15, Oct. 2. B. DUNLOP.

Diagnosis of Ectopic Gestation

SIR,—The interesting paper by Dr. W. C. W. Nixon on aids in the diagnosis and treatment of ectopic gestation (*Journal*, September 18, p. 579) recalls a method I adopted sometimes to confirm the diagnosis of ectopic gestation in doubtful cases. As Dr. Nixon says, acute tubal rupture with severe internal haemorrhage very seldom calls for any additional diagnostic measures. The puncture of the posterior vaginal fornix is certainly, in the majority of cases, an appropriate means of confirming the diagnosis. But because of the danger of infection or intestinal adhesions I should think it is not always safe unless immediately followed by laparotomy.

The occurrence of shoulder pain is also a very useful sign, and the patient ought to be questioned about it, though in my experience most patients do not feel any such pain. To induce this symptom by irritating the phrenic nerve I put the patient on the operating table in the Trendelenburg position, preferably under very light general anaesthesia. If there was but a small extravasation in the pelvis some blood came in contact with the inferior surface of the diaphragm, and within a few minutes the patient started a regular singultus. The hiccup stopped of course with deeper anaesthesia—for which chloroform was never used.

In several cases in which I applied this test with a positive result the laparotomy showed an ectopic gestation with some extravasation into the pelvis, and often only a trace of blood in the upper abdomen. I have had no opportunity of trying the same test in cases of ascites, in which I should think it would also be positive. Whenever I find the peritoneal cavity containing free old blood I do not perform appendicectomy or any other operation on the gut, unless the need is urgent, because of the danger of infection of the peritoneum.—I am, etc.,

London, N.W.6, Sept. 25. H. G. LIEBMANN.

Continuous Negative Pressure in Surgery

SIR,—May I be allowed to compliment Mr. M. S. Bennett-Jones on his well-thought-out paper on continuous negative pressure in surgery (*Journal*, September 25, p. 613). There are one or two statements, however, to which he has committed himself I think unfortunately because, while not really contributing to his argument, their accuracy is open to challenge. If Mr. Bennett-Jones will consult my note on page 624 of the same issue he will see that the use of intercostal drainage by no means "entails" the use of a "small drainage tube." The internal diameter of the cannula which I there describe is 10 mm.

Then again, he says, "In narrow intercostal spaces the pressure of large drainage tubes *may* cause necrosis of adjacent ribs." One has also heard it said that necrosis of rib *may* occur after rib resection for empyema. I suppose as a humble scientist I must admit that anything *may* happen, but as a practical surgeon I do not consider that either statement need cause us any concern, whether we believe in rib resection or intercostal stab. Personally I believe in the latter as the first step at least in almost every case. I am sure Mr. Bennett-Jones is wrong when he says that "it is better to resect a rib in all cases." Even when he weakens so far as to say "in most, if not in all, cases" I think he is making a considerable overstatement. I could say much about the efficacy of the comparatively weak suction of the simple water-seal method in drainage both of empyemata and of the chest after lobectomy, but I do not want to suggest that the stronger suction secured by Mr. Bennett-Jones is not an excellent thing too; in more chronic cases it is admirable. His presentation of the case for closed drainage of the chest could hardly be bettered.—I am, etc.,

Liverpool, 1, Oct. 1. JOHN T. MORRISON.

The Scope of Orthopaedic Surgery

SIR,—I would like a ruling on a discussion as to the limits of orthopaedic surgery. Do the following cases come under orthopaedic or general surgery? Gunshot wounds of arm; all amputations; osteomyelitis; sarcoma of knee; finger amputations; motor accidents to limbs; lacerations.—I am, etc.,

Grimsby, Sept. 23. S. E. DUFF.

The Dangerous Area of the Face

SIR,—In connexion with the annotation which appeared in the *Journal* of September 25 (p. 629) may I point out that the venous or lymphatic anatomical peculiarities of the upper lip are not in themselves sufficient to explain the high mortality which attends complicated facial furuncles. The lachrymal sac is much nearer to the cerebral veins and is often infected, yet the mortality is probably *nil*—at least I never saw or heard of a fatal issue. To a lesser degree the same applies to hordeolum. I remember seeing two fatal cases of thrombosis of the cavernous sinus following a hordeolum of the upper lid, but in view of the frequency of hordeolum the mortality must be nearly *nil*, or at least very small indeed. These are facts pointing to the solution of the problem. The lachrymal sac is so situated that the action of the facial muscles in talking and eating does not affect it. Only the orbicularis palpebrarum participates in the movement

of the eyelids, and usually a hot fomentation over the affected lid reduces its action to a minimum. It is the movement of the facial muscles that presses on the inflamed venules and squeezes out from them septic emboli, infecting the cerebral veins.—I am, etc.,

London, E.1, Sept. 25. N. PINES.

Sulphanilamide in Gonorrhoeal Infections

SIR,—In a letter published in the *Journal* of September 25 (p. 636) Mr. Morton Whitby describes a system of treatment of gonorrhoea, which has, he states, enabled him "to proclaim a cure between the fourth and eighth week. . . ." The difficulty of assessing cure in this disease is, of course, notorious. It would therefore be of value to know what tests of cure he has employed. He mentions the use of "urethral instillations of a mercurochrome solution massaged into the bladder." It is not easy to understand how a solution can be conveyed from the urethra to the bladder by massage. Are these instillations given into the anterior or posterior urethra? Gonococcal infection of the bladder is not very common, and this makes it difficult to understand the rationale of this procedure.

Mr. Whitby also deplores the fact that ultra-short-wave therapy is not available for poor patients at any of the clinics in this country. This method was introduced at the Seamen's Dispensary at Liverpool some two years ago while I was a junior assistant there, and was extensively used in the treatment of acute epididymitis and prostatic infection.—I am, etc.,

Salford, Sept. 30. R. C. WEBSTER, M.D.

Nutrition in the Falkland Islands

SIR,—Dr. Arbour Stephens's letter in your issue of September 13 draws attention to the responsibility of Great Britain for the general care and nutrition of those in outlying colonies, in which trade and communications make living difficult and unsatisfactory for often diminishing numbers of inhabitants.

During a recent spell of general practice in one of the northernmost islands of the Shetlands I have had the chance to observe the conditions under which the people there are obliged to pass their lives. There also the teeth of the children of pre-school age are rotten and their resistance to gastric and respiratory diseases is low. But what struck me most of all was the large incidence of a type of neuritis which I attributed to a dietetic insufficiency, chiefly of vitamin B_1. Administration of this vitamin caused a marked improvement in a number of the cases. But I concluded that education was the only satisfactory method of tackling such a number of cases—being even more necessary in these districts than on the mainland, where restriction of choice in diet was not so marked.

Surely in conditions where amount and variety of diet is restricted both on account of the limited communications and the poverty of the inhabitant a great deal of good could be produced by an elementary knowledge of dietetics.—I am, etc.,

Edinburgh, Sept. 25. M. SPENCER HARRISON.

SIR,—In his letter published on September 25 (p. 636) Wing Commander Stanley Turner doubts the diagnosis of influenza by Dr. Cheverton, the M.O. on the spot, and offers some imaginative one as an alternative. In order to drive his arguments home he quotes a ship surgeon who, writing in 1769, described the soil as fine, black, earthy. This description differs greatly from the report of Sir John Orr, wherein we read that the soils are acid, the nitrogen high, but not utilizable. In the report to the Colonial Office (kindly lent me by Mr. Ormsby-Gore, the Colonial Secretary) we are told the best cows give only two gallons of milk, the majority give much less; in the cattle tuberculosis is rife and the stock through inbreeding is very puny. Dr. Turner states that the cattle are fat, fertile, and good milkers. "The people are as hardy as the animals," Dr. Turner tells us, although the Colonial Office report states "there is a considerable amount of ill-health—for example, nervous debility amounting almost to mental lethargy—possibly due to disturbance of the calcium-phosphorus ratio and vitamin deficiency."

In the report one finds that appendicitis is a common disease, but then Dr. T. P. Binns states (*Journal*, p. 637), "It was fashionable to have the appendix out." A statement of this sort is not complimentary to his successor who removed the appendix because of present-day fashions on the Falkland Islands! Dr. Binns admits the teeth were poor, but they took little care of them, and their ideas of infant feeding were not calculated to help the growth of healthy teeth. It would be interesting to know why Dr. Binns was not able to improve matters if it merely meant educating these "hardy" people.

"Nasal catarrh and bronchitis are very prevalent and asthma incidence is high;" but now that the medical profession has been informed by Dr. Turner that this asthma is due to the large amount of mutton eaten we shall see what we shall see.—I am, etc.,

Swansea, Sept. 26. G. ARBOUR STEPHENS.

Education in Food Values

SIR,—Viscount Dawson of Penn told the House of Lords that malnutrition or, as he preferred to call it, undernutrition was largely due to lack of education in the choice and cooking of food, and went so far as to suggest a panel of travelling teachers to instruct housewives how to buy and how to cook food. Dame Louise McIlroy (*Journal*, August 7, p. 258) repeated the old story of white bread and shops stacked with tinned foods, and asked how many ante-natal clinics or hospitals concerned themselves with lessons in the preparation of foodstuffs. Further, she inquired whether rural institutes gave demonstrations in food expenditure and values.

No doubt all these expedients are good, but I venture to inquire whether it ought to be the duty of clinics or hospitals or peripatetic teachers to give this instruction. We have had sixty-seven years of primary education in Great Britain and Ireland, and in these years have grievously failed in the important function of teaching our people how to feed themselves. The Education Department receives well-merited praise for supplying free milk and meals to deserving cases, but does it get due credit for having permitted the present state of malnutrition or undernutrition, so largely due to defective training, to develop?—I am, etc.,

Sept. 6. M.D., F.R.C.P.

Foreign Body in the Rectum

SIR,—I read Dr. C. P. Warren's letter (September 25, p. 638) with some interest. It is a common practice among fishermen who catch eels with hooks not to bother taking out the hook if it has been gorged, as it kills the eel. They therefore cut the line, leaving the hook inside. It was only recently that I remarked on the possible danger of this practice and suggested that it was curious that cases of the hook being swallowed were not

commoner. It is also curious that it did not get hung up in the journey down. At the same time it had a very good chance of getting through, as there was nothing to "strike" the barb in, and the point was probably not too sharp from rust.—I am, etc.,

London, E.C.2, Sept. 27. E. B. Lathbury.

"Qualification £3,000"

Sir,—I feel that the following advertisement, which has appeared recently at least twice in the "agony" column of *The Times*, is worthy of being kept on record in case the British Medical Association ever has to deal with another Osteopathy Bill, or with a Chiropractors' Charter.

> PARTNER, Osteopath or Chiropractor, either sex, REQUIRED in a large established Ophthalmic practice. Qualification £3,000.—Write Box ——, The Times, E.C.4.

As no osteopath will admit that chiropraxis has any virtue, and the chiropractors are equally scornful about osteopathy, it becomes apparent that to treat and cure eye diseases the one thing needful is—the needful!—I am, etc.,

Woolton Hill, near Newbury, Oct. 2. Henry Robinson.

Obituary

J. ALLMAN POWELL, M.D.

Physician and Anaesthetist, Cheltenham General Hospital

We regret to announce the death on September 29 of Dr. John Allman Powell, honorary physician and honorary senior anaesthetist to the Cheltenham General and Eye Hospitals, and consulting physician to the Tewkesbury Hospital. He was born in 1884, eldest son of the late Dr. B. C. Powell of Roscrae, Co. Tipperary, and studied medicine at Trinity College, Dublin, where he had a brilliant academic career, graduating B.A., B.Ch., and B.A.O. in 1907, and proceeding to the M.D. in 1910. After winning prizes in the University and holding a scholarship and resident posts at the Adelaide Hospital, Dublin, Dr. Powell was appointed resident medical officer at the Wolverhampton General Hospital. He began practice in Cheltenham in 1913, and the following year married Nora Kathleen, daughter of G. N. Oulton, K.C. He served three years with the R.A.M.C. during the war. In 1923 he was appointed as a physician to the Cheltenham General and Eye Hospitals. In 1935 he was elected president of the Gloucestershire Branch of the British Medical Association, but shortly before he was due to take office he was stricken by a coronary thrombosis, and a second attack two years later ended his life. Dr. Powell knew no fear, nothing daunted him to the last moment of his life. Within some months of his first attack he delivered his presidential address to the Branch: it was characteristic of the man, enforced rest was the one thing he was intolerant of. He had a large practice, and his repute as a sound physician caused his opinion to be widely sought and much valued by his colleagues. He threw himself into his hospital work with enthusiasm. He made a special study of diabetes, and designed a clinical chart for correlating the dosage of insulin with the rise and fall of sugar in the urine and the amount of calories in the diet. Recently he had been doing valuable work in the use of the oxygen tent, and had demonstrated its use at meetings of the B.M.A. at the hospital. At the annual summer clinics given by the staff of the hospital his lectures were distinguished by common sense and clarity enlivened by a spontaneous wit that drove his views home to his audience. For the same reason he was the most welcome of speakers at meetings of the local Branch of the B.M.A. His remarks proved his wide reading, and yet were made with a modesty and puckish humour that were all his own. The funeral took place at the Cheltenham Parish Church, and though the memorial service had been notified as for personal friends and relatives, the church was filled, and over forty of his profession were present.

Dr. J. B. Davey writes:

The death of Dr. Allman Powell has brought sorrow to hundreds of homes, rich and poor, in Gloucestershire. In Allman, as he was affectionately known to his colleagues, were combined a wide knowledge of medicine with great resourcefulness. He was at his best, perhaps, in an emergency. Then a decision was quickly reached and as promptly acted upon. Until everything that could be done for the patient had been done he gave himself and anyone whom he had called in to assist no rest. When to others all hope seemed to be lost Allman would stick to his patients, and at times seemed to compel them to recover by his infectious optimism. A very skilful anaesthetist, he was in great demand by surgeons in difficult cases. Intensely interested in his profession, he had the knack of rapidly extracting the important facts from a book or lengthy paper, and was ever eager to give his patients the benefit of any new and promising methods of treatment or diagnosis. An enthusiastic supporter of the B.M.A., he frequently contributed papers or in discussions at the meetings of the Gloucestershire Branch, and his election to its presidency about three years ago afforded him the liveliest satisfaction. Unfortunately symptoms of the disease which ultimately proved fatal declared themselves shortly before he was due to assume office, and his activities as president were much curtailed in consequence. The loss of an eye at hockey some years ago debarred him from ball games, but on a horse or in waders with a rod he could hold his own with most sportsmen. Indeed it was a real delight to watch him cast a fly in an awkward position. He enjoyed all that is good in life, but few things more than a day's fishing. As companion on a holiday he was ideal. A very charitable and generous nature, complete absence of professional jealousy and a genuine desire to help colleagues in any difficulty endeared Allman Powell to practitioners all over the county. He was a most lovable man.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a congregation of the Senate, held on October 1, Professor H. R. Dean, M.D., Master of Trinity Hall, was admitted to office as Vice-Chancellor. In the course of his valedictory address the outgoing Vice-Chancellor, Mr. G. H. A. Wilson, Master of Clare College, mentioned the offer of a very large sum from the International Educational Board of the Rockefeller Foundation for new buildings and endowment for study of the biological sciences; the bequest of £100 from the late Lady Allbutt for the Cambridge medical school library; the signing of a contract for the new anatomy building; and the approval given for establishment of new laboratories for research in clinical medicine.

UNIVERSITY OF LONDON

The late Mrs. Florence Joy Weldon of Oxford bequeathed her residuary estate upon trust for the foundation at the University of London of a Professorship of Biometry for the higher statistical study of biological problems in memory of her husband, the late Walter Frank Raphael Weldon, at one time Jodrell Professor of Zoology at University College, London. She wished the professorship to be associated with University College, in the hope that the close friendship between her husband and the late Sir Francis Galton might be perpetuated in the active association of the Weldon and Galton Professorships.

The University accepted the benefaction with gratitude, and a trust deed has now been approved by all the parties concerned. The chair has been established at University College, the first holder being Professor J. B. S. Haldane, F.R.S., who took up his appointment on October 1.

University College

A course of ten lectures on "Biometry" will be given by Professor J. B. S. Haldane, F.R.S., at University College, Gower Street, W.C., on Tuesdays, at 5 p.m., beginning October 12. The course is open without fee to students of the University registered in the Faculties of Science and Medical Sciences.

Medical News

The Harben Lectures for 1937 of the Royal Institute of Public Health and Hygiene on "The Theoretical and Practical Significance of Endocrinology" will be delivered by Professor E. C. Dodds at 28, Portland Place, W., on Monday, Tuesday, and Wednesday, October 11, 12, and 13, at 4 p.m. In the first lecture Professor Dodds will speak on the posterior lobe of the pituitary, in the second on the anterior lobe of the pituitary, and in the third on the sex hormones.

The opening address of the new session will be given at Guy's Hospital Medical School to-day (Friday, October 8), at 3 p.m., by Sir Edward Poulton, F.R.S., President of the British Association, who will also distribute the prizes.

A course of four lectures on the physiology of hearing and speech will be given by Dr. Phyllis M. Tookey Kerridge on October 11, 18, 25, and November 1, at 5 p.m., at University College, Gower Street, W.C.

The autumn dinner of the Aberdeen University Club will be held at the Café Royal, Regent Street, London, on Thursday, November 18, with the Lord Rector, Admiral Sir E. G. R. Evans, in the chair. Medical graduates who are not members of the club and who wish to be present should communicate with Dr. Andrew Topping, County Hall, S.E.1.

The autumn series of Chadwick Public Lectures opened at Gateshead on October 8. Other lectures will be given in London, as follows: At 26, Portland Place, W., on October 14, at 5.30 p.m., Professor W. A. Osborne of Melbourne, on "The Study of Nutrition"; November 16, at 5.15 p.m., Dr. Bernard Myers, on "The Promotion of Health in the Empire Citizen"; November 2, at 5.30 p.m., Dr. J. M. H. McLeod, Malcolm Morris Memorial Lecture on "Leprosy in Great Britain at the Present Time." At the London School of Hygiene and Tropical Medicine, Gower Street, W.C., on November 24, at 5.15 p.m., Mr. Pointon Taylor, on "Town Planning and Town Dwelling"; December 7, at 5.15 p.m., Dr. William Butler, on "The Thames Estuary and the Problem of Sewage Disposal of Greater London."

A meeting in support of the Caldecott Community for Children, The Mote, Maidstone, will be held at the Mansion House on Tuesday, October 19, at 3.30 p.m. The Lord Mayor of London will preside, and the Archbishop of Canterbury, the Earl of Lytton, and Miss Rendel will speak on the work of the Community, which exists for the benefit of normal children (girls and boys) from abnormal homes. Particulars may be had from the appeal secretary, Miss Gourlie, 259A, King's Road, S.W.3.

In our advertisement columns this week the British Postgraduate Medical School, Ducane Road, W., announce a vacancy for the post of Sub-Dean of the School at a commencing salary of £1,250 per annum.

The annual dinner of the Surgical Instrument Manufacturers' Association will be held in the King's Hall of the Holborn Restaurant on Friday, October 15, at 7 p.m.

The forty-third congress of the Italian Society of Internal Medicine will be held under the presidency of Professor Carlo Gamna at Turin from October 19 to 22, when discussions will be held on the modern conception of colitis, the pathology of old age, and the diagnosis and treatment of sellar and parasellar syndromes. The secretary is Professor Cesare Giordano, R. Clinica Medica, Corso XXVIII Ottobre, Turin.

The Duke of Kent will visit Birmingham on October 13 to open the conference of the British Hospitals Contributory Schemes Association. On the following day he will inspect the progress made with the building of the Birmingham Hospitals Centre.

Under the auspices of the British Institute of Philosophy an address will be given by Dr. William Brown on "Modern Psychology and Religion" at University College, Gower Street, W.C., on Tuesday, October 12, at 8.15 p.m. Cards of admission can be obtained from the Director of Studies, University Hall, 14, Gordon Square, W.C.1.

During the course of the International Cremation Congress held in London last week the setting up was announced of an International Cremation Federation "for the purpose of spreading knowledge of the superiority in economic, aesthetic, and other respects of cremation over the traditional form of burial." Lord Horder, chairman of the council of the Cremation Society, welcomed the setting up of the new organization, and said that it marked a great step forward. The first president of the International Federation is Dr. P. H. Van Roojen (Holland); the vice-presidents are Dr. H. Zeiss (Germany) and General F. Bauer (Sweden). The secretary-general is Mr. P. Herbert Jones, and the treasurer is Dr. H. T. Herring, honorary secretary of the Cremation Society. The headquarters will be in London.

After many years of service Dr. Tom Jays, so well known for his work as Principal of Livingstone College, has resigned as honorary secretary of the Medical Prayer Union, and Dr. Neville Bradley, 49, Highbury Park, London, N.5, has been appointed in his place, and any practitioner desirous of obtaining information about the Union is requested to communicate with him. Among its activities are the annual medical missionary breakfast held during the Annual Meeting of the British Medical Association, and meetings in London and the provinces.

On September 30 Dr. F. W. Eurich was entertained to dinner at the Midland Hotel in Bradford by members of the medical profession and of the wool textile industry, when cheques were handed to him in recognition of the services he has rendered to the community, more especially in anthrax prevention, during his forty years in the city. Dr. W. Hayburn took the chair, and Dr. J. B. Dunlop, in proposing the health of the guest, dwelt on Dr. Eurich's investigation into anthrax, which, he said, had armed the wool textile industry against a sinister scourge. The cheque on behalf of the medical profession in Bradford and the West Riding was handed to Dr. Eurich by the chairman. Among the other speakers who paid tribute to Dr. Eurich's work were Dr. W. MacAdam of Leeds, and Dr. F. J. O. Coddington, Bradford stipendiary magistrate.

On September 30 the Lord Mayor of London announced at the Mansion House that Lord Nuffield had given £50,000 to the rebuilding fund for the Hospital for Sick Children, Great Ormond Street. Another gift by Lord Nuffield announced on the same day is £15,000 to the Princess Elizabeth Orthopaedic Hospital, Exeter, for the purpose of extensions and research.

Lord Nuffield has placed £100,000 in the hands of trustees for the development of orthopaedic surgery, and an organized service for the early discovery and the cure of crippling disabilities in South Africa. The scheme will be based on information to be gathered and collated by Professor G. R. Girdlestone, who will visit South Africa for the purpose during December and January.

The October issue of the *Practitioner* is a special number devoted to advances in diagnosis and treatment: it includes twenty-one signed articles reviewing recent progress in general medicine, conservative surgery, biochemistry, and the specialties. The price is 7s. 6d.

On September 30 the Lord Mayor of Birmingham launched an appeal for £49,000—the sum necessary to be raised before the Birmingham hospital centre scheme can be cleared of debt. Sir Charles Hyde, proprietor of the *Birmingham Post*, had lowered the debt to £49,000 by contributing £5,000.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin).

QUERIES AND ANSWERS

Pain in the Male Nipple

"Balbus" writes: I have under my care a minister—6 feet high and 8 stone—who though 82 years old is very active and can walk twenty miles with ease. He complains that three months ago he felt a pain and uneasiness in both nipples of the mammae. One recovered entirely; the other still remains in the same condition. The chief symptom is a "jagging" pain and an uneasiness when anything such as clothing comes in contact. There is no retraction or inflammation of the nipple. It looks perfectly normal, yet at its base there seems a little induration compared with the other. Can any of your readers tell me if they have had any such experience in practice or refer me to any book in which one can find a description of the condition. I have been thirty years in practice, but have never seen it before. I felt for the axillary gland, but found no indication there. I thought the trouble might have arisen from rheumatism, as the patient has some other symptoms of that disease, but perhaps I am wrong.

Treatment of Enuresis

Dr. A. G. Brinton (Johannesburg) writes: On several occasions this condition has been immediately relieved by correcting small errors of refraction. The last case I had is typical of many. A boy, aged 10, had + 0.5 astigmatism at 180°, and this correction was ordered to be worn constantly. A very grateful letter from his father arrived a month later. This is comparable to many cases of mental disturbances, hay fever, sunstroke, bilious attacks, and many neuroses which are cured by fractional hypermetropic astigmatic corrections, usually at "bad" angles round about the horizontal.

LETTERS, NOTES, ETC.

The "Times" Health Supplement

On Thursday, September 30, the *Times* marked the inauguration of the Government's national health campaign by issuing a special supplement. In this supplement articles from authorities on different aspects of national health reviewed the progress which has been made in "the new preventive medicine." Sir Farquhar Buzzard, Regius Professor of Medicine in the University of Oxford, contributed an article on the doctor in the home; Sir Arthur MacNalty, Chief Medical Officer to the Ministry of Health and Board of Education, reviewed the British public health services, while those for Scotland and Wales were dealt with by Dr. J. M. Mackintosh, Chief Medical Officer of the Department of Health for Scotland, and Mr. John Rowland, Chairman of the Welsh Board of Health. Sir George Newman contributed a study on the health of the school child, and the subject of child guidance was considered by Dr. A. Macrae. Dr. N. D. Bardswell outlined the national scheme for the prevention of tuberculosis, and an article on mental health was written by Sir Laurence Brock. Sir Edward Mellanby, the secretary of the Medical Research Council, in a short article explained how the work of medical investigation is carried out in this country. An article on the voluntary hospitals was written by Mr. H. L. Eason, Principal Officer of the University of London. Other contributions to this symposium were by Dr. J. D. King on the care of the teeth, by Dr. G. F. McCleary on safer motherhood, and by Dr. M. D. Mackenzie on recent trends in physical culture abroad, together with articles by Dr. Drummond Shiels on the work of the British Social Hygiene Council, on port sanitation by Dr. W. M. Frazer, and on the work of the National Ophthalmic Treatment Board by Dr. I. Harvey Flack.

Contamination of Postage Stamps

Dr. A. W. Paterson (Ipswich) writes: Noting in your issue of October 2 a letter from Dr. Holderness, M.O.H., Loughborough, with regard to insanitary practices of shopkeepers, I am stimulated to draw attention to a practice almost universal in post offices when supplying postage stamps. The stamps, whether singly or in sheets, are invariably pushed across the counter with the gummed side downward and often flatly applied to the counter. As it is a practice, convenient if far from sanitary, to lick stamps before applying them to envelopes, etc., the likelihood of infection from a filthy counter is very great. Considerable care should be taken to keep the stamps very clean, and steps should be taken to instruct the public never to lick stamps under any circumstances. I have not seen attention drawn to this source of infection before.

Medical Golf

The autumn meeting of the Scottish Medical Golfing Society was held at Bramshot Golf Club, Fleet, on September 26, seventeen members being present. A bogey competition was held in the morning, with the following results: (1) Dr. A. A. M. Reekie and Mr. Hamilton Bailey—one up. (2) Dr. F. M. Loughnane and Dr. MacMyn—all square. The foursomes in the afternoon were won by Dr. Bruce Williamson and Mr. Hamilton Bailey—all square. Dr. Reekie and Mr. Charles Donald, Dr. Shanks and Mr. Gillespie, tied for second place with one down.

The eighth autumn meeting of the Sussex Medical and Dental Golfing Society was held on September 26 at Southdown in glorious weather. The captain's prize, presented by Mr. Scott Page, was won by A. R. Elliott with a score of 1 up. The runner-up was J. H. Twiston Davies. The afternoon round was a four-ball foursome against bogey, which resulted in a tie with 3 up between W. Gallaugher and W. G. Thwaites, and O. A. C. Warren and L. Muir-Smith.